The IRON AGE

April 10, 1958 A Chilton Publication The National Metalworking Weekly

Welding Show Feature

What Gas to Use For Shielded Arc Welding P. 91

How Much Business In New Highway Program? – P. 55

What Will Jobless Pay Spiral Cost Industry? – P. 60

Digest of the Week P. 2-3

Cold Extrusion from

ARISTOLOY 5120

Cut Machining and Material Cost

To Molloy Manufacturing Co., cold forming of automotive parts like this steering worm called for steel with unusual cold working qualities. Uniformity and absence of surface defects were, of course, necessary . . . but closely controlled conditioning and annealing were absolutely vital. Copperweld, one of the electric furnace steel producers working on this problem, developed special processing methods that produced a steel which met Molloy's cold extruding and upsetting requirements. The production proof . . . parts like these, cold extruded and upset from a $^{29}/_{32}$″ round to a finished maximum diameter of 1.440″, with substantial savings in material and machining time.

Investigate the wide range of Aristoloy A.I.S.I. analyses for extrusion application. Then call or write for assistance from a Copperweld Field Metallurgist in selecting the best material for your job.

ARISTOLOY STEELS

COPPERWELD STEEL COMPANY • Steel Division

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Tool Steel Topics

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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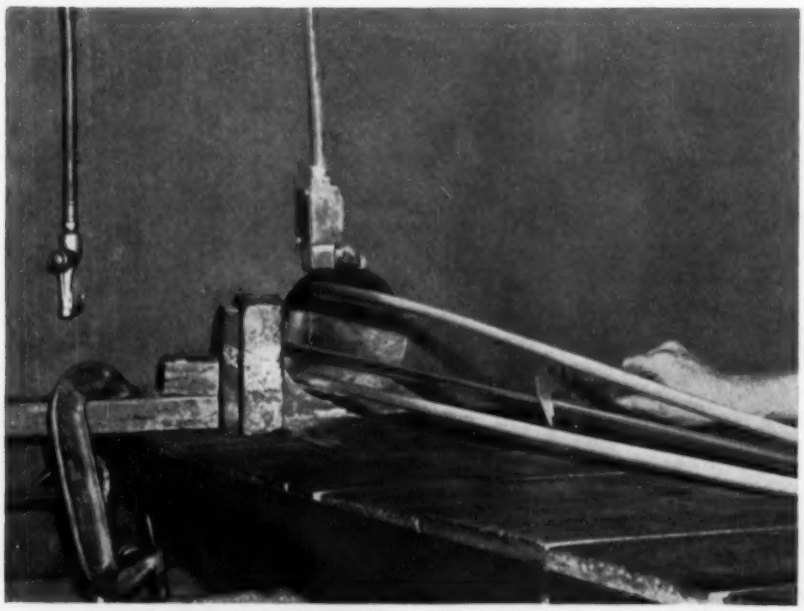


Showing extrusions leaving the press. The die of Cromo-WV tool steel is not visible.

Die made from Cromo-WV passes tough extrusion test

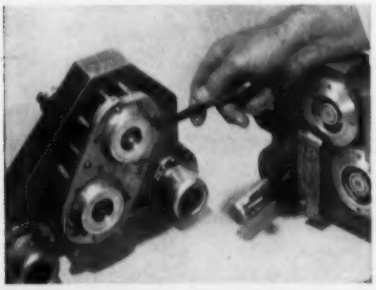
Quality plus economy — that's the kind of a die steel they needed at American Aluminum Extruders, Miami, Fla., to produce aluminum extrusions used as decorative trim. Our local tool steel distributor, J. M. Tull Metal & Supply Co., Inc., recommended Bethlehem Cromo-WV.

"We've had a lot of experience with this grade," they said. "Give it a try, and the performance figures will speak for themselves."

That's just the way it turned out. Cromo-WV was satisfactory in every way. Hardened to Rockwell C-47, the die extruded about 2,500 lb of aluminum before polishing was required.

Cromo-WV, in addition to its 5 pct chrome, contains .30 pct vanadium. It is a modification of our popular Cromo-W, the original 5 pct chrome hot-work steel. Like Cromo-W, it combines red hardness, shock resistance, and resistance to heat-checking. It is an ideal grade for extrusion work.

Your Bethlehem tool steel distributor will be pleased to supply Cromo-WV, whether you want a production quantity or just enough to give it a trial.



IT'S TOPS FOR BOTTLE CAPS

Here's a die made of BTR (Bethlehem Tool Room) which was used in producing millions of tinplate bottle caps. The die was hardened to Rockwell C-61, and was redressed about every third month. BTR is our general-purpose manganese-chromium-tungsten grade of oil-hardening tool steel. Tough, and safe-hardening, you can count on it for extremely long wear.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

In Machining Operations, Chips Tell a Story

A good way to evaluate a machining operation is to examine the chips carefully. This step is particularly valuable in operations where large amounts of metal are removed at high speed.

Generally, the color and shape of the chips tell a story which, when properly interpreted, can lead to improvements in the operation. For example, when machining with high-speed steel tools, the chips produced should show some temper color (yellow or brown). If they do not, it means that speed and feed might be increased greatly, boosting the production rate on the machine. When machining with carbide or ceramic tools, the chips should always be highly temper-colored (purple or blue). If otherwise, you are probably "under-machining."

The shape of the chips will vary with the type of steel being machined, but comparison of chip shape under varying conditions may provide valuable information. The ideal chip shape, indicating ideal machining conditions, is like the letter "C." Often the "C" can have a decided flourish, but this form of chip (on steel) is best. Generally, the secret of producing "C" chips lies in the proper balance of feed and depth of cut, versus speed. These factors should be varied whenever other types of chips are produced, to develop the best machining conditions.

Examination of chip shape is also of value for control purposes. For example, if "C" chips are being produced in a machining operation, and they become gradually longer or stringy, it indicates the tool is becoming dull, and requires resharpening.

It is difficult to establish more specific rules which apply to all machining operations, due to their variety and complexity. However, you can be sure that the proper control of chip color and shape will pay off in increased production.

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa.
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The IRON AGE

April 10, 1958—Vol. 181, No. 15

Digest of the Week in

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ROADBUILDING SPEEDUP

Up to the States—Congress has acted to speed up the highway program by pumping in new federal

funds. Success of the booster plan depends on how fast states move to match the grants and get work under contract. P. 55

JOBLESS PAY BATTLE

Industry Fights Federal Plans—Schemes to extend jobless pay benefit weeks arouses industry opposition. It's not a matter of money, since industry foots the bill anyway. P. 60

PAPERWORK

Republic Bypasses It—The steel industry's newest and most elaborate order processing system has been unveiled by Republic Steel. A nationwide network relays mill orders via punched tape. P. 62

ROTARY FORGING

Stirs Industry—It's a new process of cold-forging based on four die-

Metalworking

▼

WELDING RESEARCH: It's due to the hard work of many men that welding has advanced so far (for photo details see p. 11). One of the latest developments is gas shielded arc welding. A growing list of metals is being successfully welded by this technique. P. 91

faced hammers. Curtiss-Wright is bringing equipment from Austria, plans full sized jobbing department. P. 64

125TH ANNIVERSARY

Looking Ahead — Brown & Sharpe picks 125th anniversary to introduce new products. Current business slump is not discouraging to company. There's no letup in its forward thinking. P. 81

FEATURE ARTICLES

GASES FOR WELDING

How and Where to Use—Gas-shielded arc welding is no longer the one-gas, one-metal process it started out to be. New developments have unfolded so fast and the processes are now so varied, it pays to study all factors in choosing the best method for a job. P. 91

RESISTANCE WELDING

Joins Swing to Automation—A survey shows new ways to save with spot, projection, flash and seam welding techniques. A big production advantage is the very short weldtime. The process moves right into conveyorized lines. P. 99

SYNTHETIC ELASTOMER

Seals Hot Fluids—A new fluorine-containing elastomer serves in hot fluids where no other elastomer survives. In one jet engine application, the material stands 500°F immersed in Mil-L-7808 lubricant. Standard rubber processing turns out extrusions and moldings without special procedures. P. 103

WORK SHEET METAL

Learn Low-Cost Way — Low volume and short production runs plague the aircraft industry. One aircraft company has developed processing machinery and techniques to do away with costly tool- and piecemeal assembly. P. 104

PNEUMATIC TUBES

Speed Foundry Tests — Steel foundries want a fast answer from the lab when a heat seems ready to pour. Speeding melt samples to the lab in pneumatic tubes is one way to avoid costly delays. P. 106

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IRON ORE

Hard Times Pinch—After three successive years of price increases the ore industry is holding the price line. Material is piling up at Lake ports. Excess taconite offered for sale for first time. P. 59

AUTO SALES

Buyers Prefer Comfort — Total sales are off, but those who are buying new cars haven't lowered their standards. Medium and luxury cars have increased their market penetration. P. 72

FARWEST INDUSTRY

Catching Its Breath — The economy on the West Coast is stumbling, but businessmen there don't see the end of the overall growth pattern. Key to their optimism is predicted population increases. P. 79

BAD NEWS FROM DETROIT

Automakers Cut Steel Buying—Steel mills got more bad news from Detroit this week. The auto companies have said they'll be buying small tonnages until fall. **P. 129**

ADHESIVES

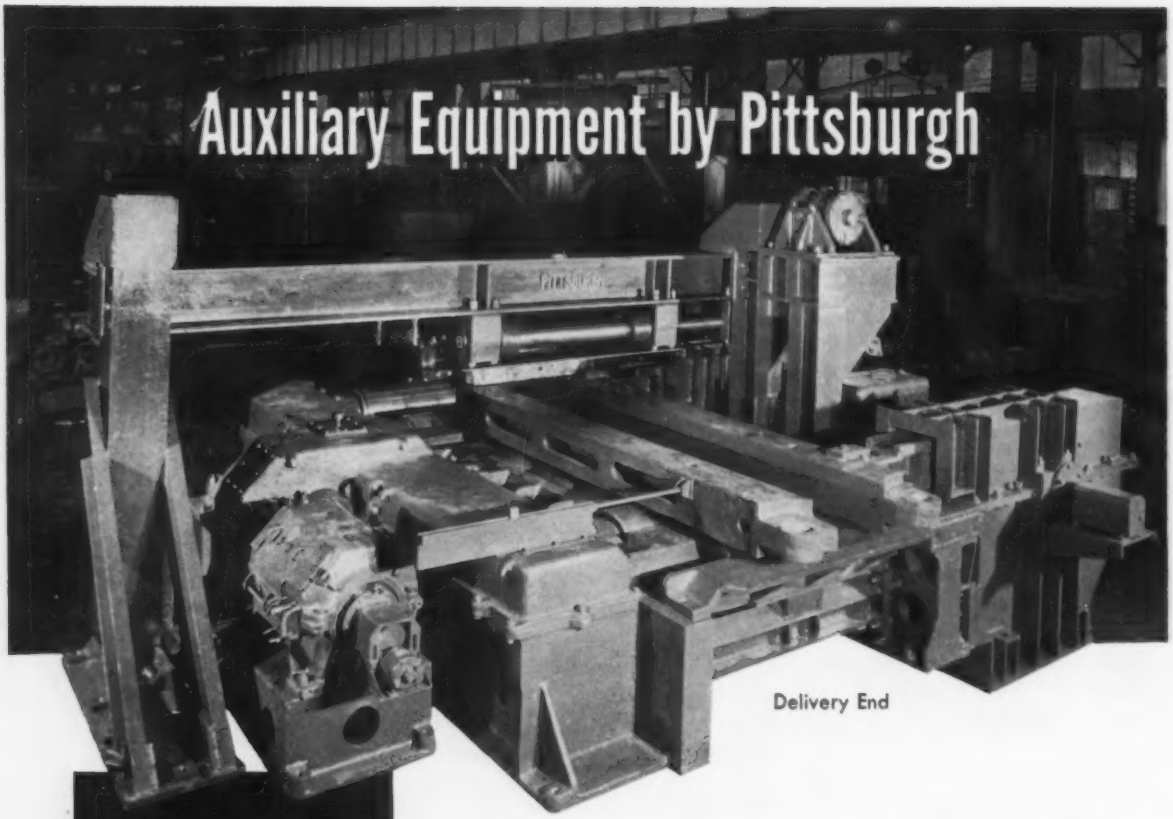
Making Progress — Adhesive makers say they have a long way to go in realizing their market potential. But new uses and new customers are keeping 1958 sales levels about on a par with last year. P. 130

NEXT WEEK

SPOTTING AN UPTURN

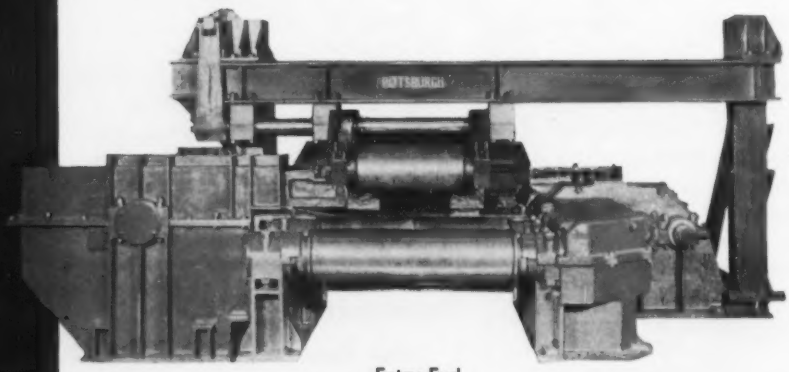
It Takes Skill—Many people are grasping at straws to detect an upturn in business. Next week's special report, written by a top business analyst, will point out the most important early signs to look for. 1958 will be analyzed.

Auxiliary Equipment by Pittsburgh



Delivery End

slab scarfer table with holddown roller and adjustable guides



Entry End

This Slab Scarfer Table is a typical example of the wide variety of auxiliary mill equipment designed and built by Pittsburgh Engineering and Machine.

Slabs from the blooming mill are scarfed on all four sides in an adjacent unit thus eliminating 1/64-1/32" of scale and other surface irregularities.

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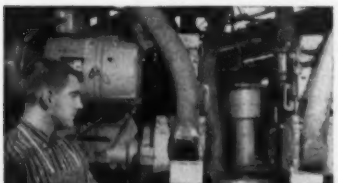

JET ENGINE COMPONENTS *are precision finished automatically at high production rates on Osborn Brushamatic® 51-OOL Machine.*

HERE'S how a jet engine manufacturer has broken a production bottleneck . . . saved dollars and days in the precision-finishing of jet engine components . . . with Osborn Brushamatic® Methods.

Sharp edges, burrs or scratches on components cause stress concentrations and resulting fractures—so a high degree of surface refinement is essential. *Tedious hand finishing each of these parts used to take 80 minutes.* Still, job quality was inconsistent . . . costly in time and money.

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It's typical of how Osborn Power Brushing works to help *you* speed production . . . cut costs . . . improve product quality. An **O**sborn **B**rushing **A**nalysis, made in your plant at no obligation, will show you how. Write us for details—and for your copy of the 20-page Brushamatic® booklet. *The Osborn Manufacturing Company, Dept. F-68, Cleveland 14, Ohio.*

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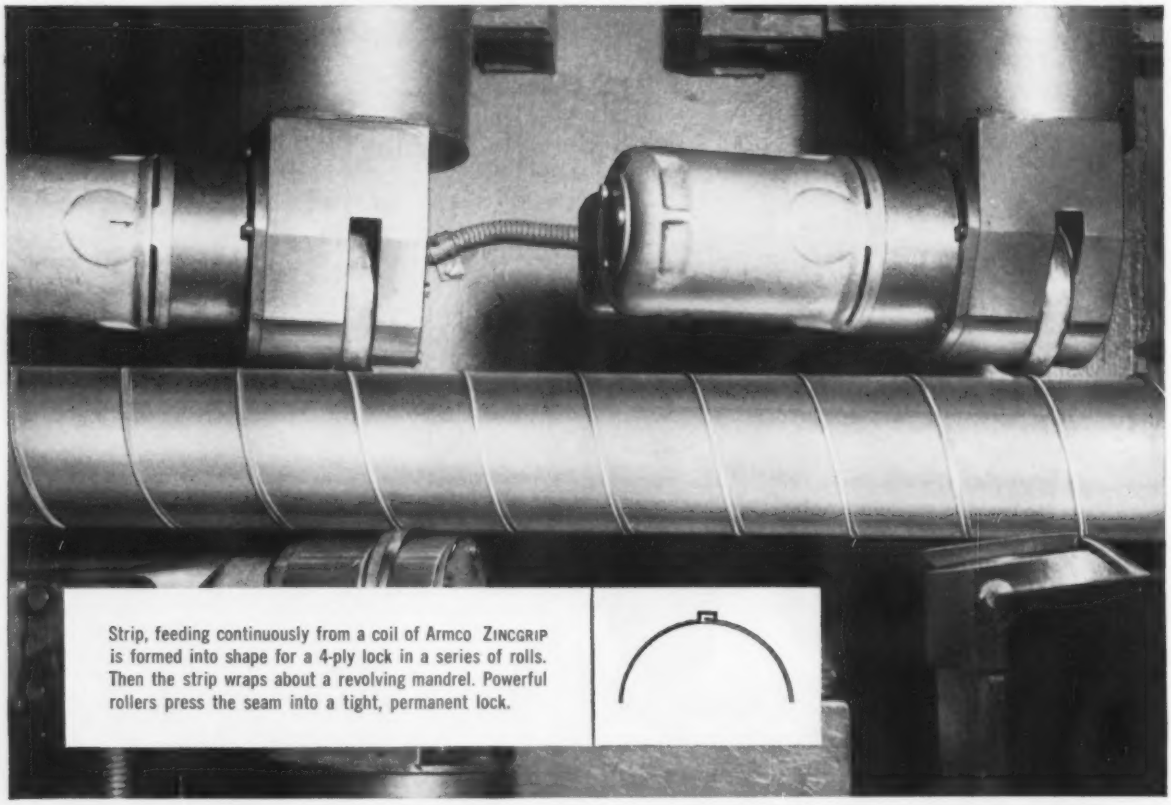
in this continuous lockseaming operation . . .

Zinc coating on Armco ZINCGRIP Steel doesn't flake or peel



Strip, feeding continuously from a coil of Armco ZINCGRIP is formed into shape for a 4-ply lock in a series of rolls. Then the strip wraps about a revolving mandrel. Powerful rollers press the seam into a tight, permanent lock.

Here's in-shop evidence that the zinc coating on Armco ZINCGRIP® Steel clings tightly during severe fabrication.

This machine forms sheet metal into conduit with a continuous spiral lockseam. Few fabricating operations could provide so severe a test for a zinc-coated steel. But Armco ZINCGRIP Steel meets every requirement. Its special hot-dip zinc coating doesn't flake or peel.

This complete zinc protection is doubly important for the conduit. It not only wards off rust when exposed on construction sites, but resists corrosion in areas within buildings where maintenance is difficult or impossible.

If your products require drawing, forming, lockseaming, or any other severe fabrication, you can rely on Armco ZINCGRIP. Just fill in and mail the coupon for full information about this workable, zinc-protected steel.

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The Big Brother Pit
Are We Falling Into It?

We are becoming mired in a world of unreality. Maybe it started years ago. But in recent months our misconceptions have multiplied rapidly.

The ones who are helping us to kid ourselves —aside from ourselves—are those who have been elected to look after our nation's future, the lawmakers.

Little by little over the years we have given up to our Government rights which should not have been traded for such a sickly price. We have allowed our dependence upon government to reach a point where we can no longer see the consequences.

We support farm prices at the people's expense. If the average homemaker knew the inside story on the cost of support, storage, interest and distribution that go into our fictitious farm prices, there would be a rebellion that would dwarf the whisky rebellion.

If the average person honestly knew what effect the yearly wage increases have had on him, union leaders would have a much tougher time getting so much so often.

If you and I knew once and for all that we can't buy or spend our way out of a debt that was "easy come" but not "easy go," we might change our thinking—and our mode of living.

If we, as businessmen, realized—as we ought to—that the consumer won't always pay a high price no matter what caused it, we would show more restraint in pricing our goods.

If lawmakers were not made of such flimsy stuff, they would know that the real answer to tax revision was statesmanlike changes in the entire tax structure; in the lower, middle, and top brackets.

If some of us would quit using business as our national whipping boy, we would find out it was good business—and for us.

If we grew up and realized that hard work, ideas, and use of what brains we have were better than anything government bureaucracy and mediocrity did, we would be much better off.

As long as we are hell bent for Big Brother and not only want to blindly follow him but plead to be told what to do, we are lost. If you don't believe this, sit quietly down and think how far your city, county, state, and national government have intruded into your life, rights, and future.

Dare we face it?

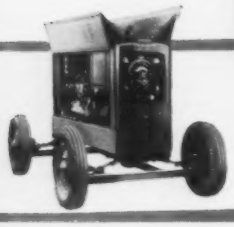
Tom Campbell

Editor-in-Chief

AC Transformer 180 to 500 amperes

DC Rectifier Sizes 300-400 ampere

AC/DC Welder 200 ampere combination



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Get the arc welder that's RIGHT for you—

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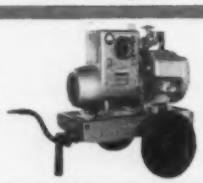
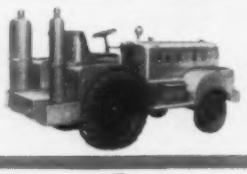


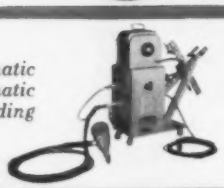
AC/AC Welder for AC power or AC welding

"Contractor's Special" Water-Cooled 250 amp. size

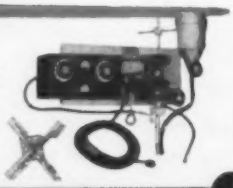


Weldmobile Sizes 400-600 ampere

"Powromatic" for automatic arc welding



Handomatic Semi-Automatic arc welding



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Steel Imports

Sir—In the March 20 issue of The IRON AGE you published parts of the testimony before a House Committee by Mr. Lynch of the Atlantic Steel Co., together with a chart of barbed wire production and barbed wire imports.

As an importer and exporter of steel, I would like to point out that there is more to the story of reciprocal trade in steel than your article would indicate.

Mr. Lynch and officials of other steel firms concentrating on products which are traditional import items are indeed feeling the pinch of heavy import competition.

Nevertheless, viewed as a whole, the U. S. steel industry has consistently exported more than twice as much as the country has imported, as shown on the table below which was part of the testimony which I gave before the Committee on behalf of the American Institute for Imported Steel.

	Net tons (millions)	
Year	Imports	Exports
1954	1.2	3.1
1955	1.4	4.5
1956	1.9	5.1
1957 (10 months)	1.6	6.0

Figures showing actual net imports versus exports (deducting pig iron, ferroalloys and other items imported by domestic steel mills for their own consumption) show an even more one-sided advantage in reciprocal trade held by U. S. steelmakers.

Thus, while some firms are adversely affected by imports, the industry as a whole, with its heavy exports of flat-rolled products, structural shapes, stainless steel, and many other items, has always benefited greatly from reciprocal trade.—K. Orban, Kurt Orban Co., Inc., New York.

Industrial Voice

Sir—In your March 6 issue on p. 77 under the heading "Price Probers Hit Steel Rise" you report that U. S. Steel Chairman Roger M. Blough complained about the manner in which the Investigating Committee reported.

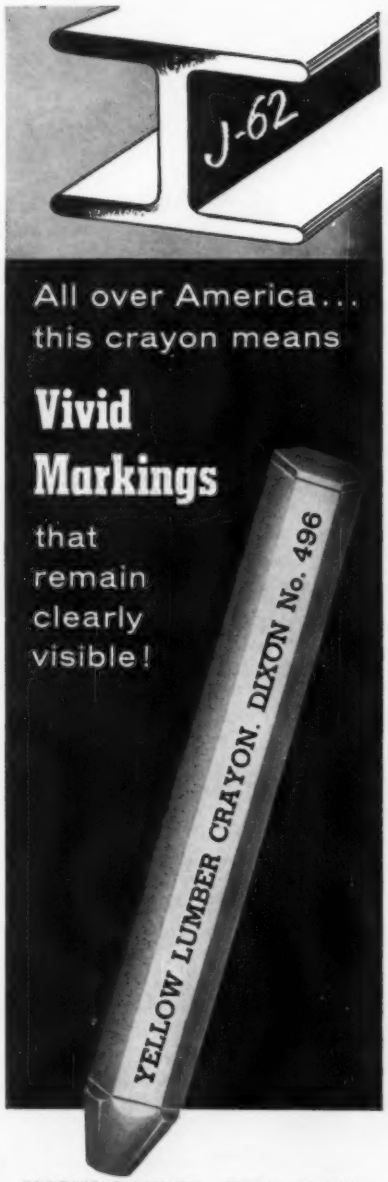
May I respectfully say that big business shoulders a large share of the blame for the deplorable condition this country finds itself in regard to the so-called liberal and radical tendencies of our government.

For years and years industry and business have been sitting idly by saying nothing and taking everything in their stride that has been dished out by these so-called liberals.

They have ignored their responsibilities completely as leaders and are only reaping now what they have sown by keeping quiet when they should have spoken.—F. K. Hellinger, Culpeper, Va.

▪ Sorry we cannot agree with your thesis. We believe that business has been taking its case to the public during the past few years in an honest and aggressive fashion. —Ed.

"Stop worrying about production, Boss. With you away there's hardly been any."



MARKS LUMBER, STEEL, IRON, CONCRETE . . . . . .

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Specify the surface to be marked.

In Red, Yellow, Blue and 9 other highly visible colors

Sold everywhere in Mill Supply Houses, Hardware Supply Firms, Industrial Supply Distributors and Engineering Supply Firms. Be Sure To Specify:

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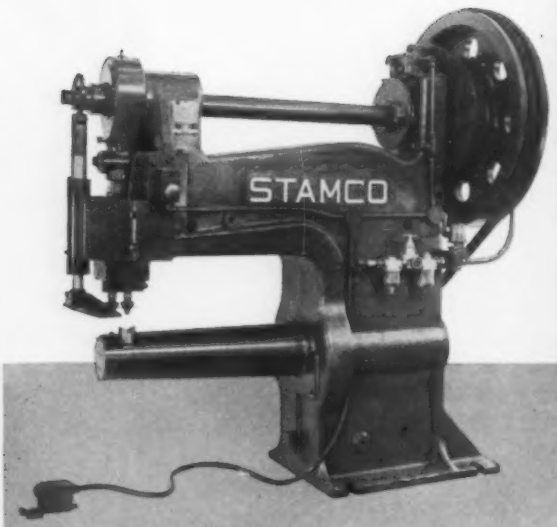
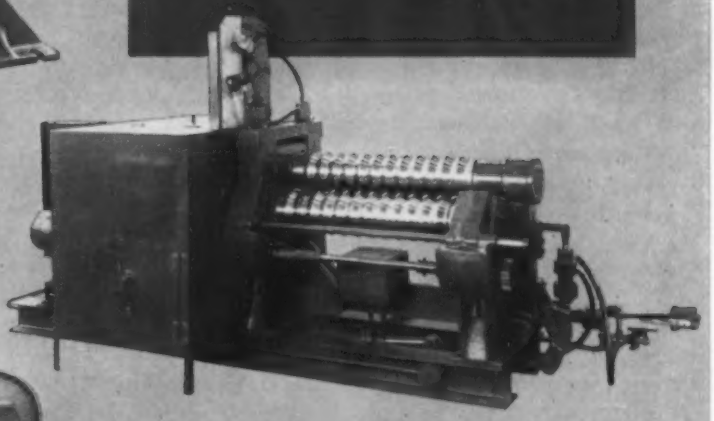
PENCIL SALES DIVISION—DEPT. LIA-4
167 Wayne Street, Jersey City 3, N. J.
Dixon Pencil Co., Ltd., Newmarket, Canada

for roll corrugating and culvert forming, see

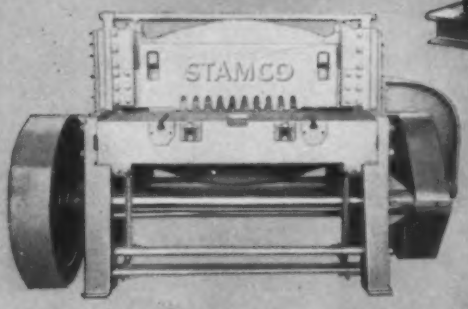
Stamco



Stamco high duty culvert punch and riveter equipped with air operated friction clutch brake and cam stripper.



Stamco 8 ga. culvert curving roll with air operated endgate and motorized roll adjustment.



Stamco 8 ga. x 36" corrugated shear.

Stamco #6A high speed corrugator.

Stamco, Inc., New Bremen, Ohio,

FATIGUE CRACKS

Four Experts

The welding industry is fortunate in the caliber of its research and development personnel.

The three on this week's cover specialize in process and equipment study at the Newark Development Laboratories of the Linde Co., Div. of Union Carbide Corp.

John F. Galbraith (center) is manager of the lab's welding development work. Flanking him are (left) Norman Davis, staff engineer at the lab, and J. S. Kane (right) laboratory division head, electric welding apparatus.

Another welding expert, O. T. Barnett, assistant manager of the Metals Research Dept., Armour Research Institute, wrote our feature technical story which begins on p. 91—"What Gas to Use for Shielded Arc Welding."

They are, as the phrase puts it, "a good group," well qualified to represent the welding industry.

When Steam Was King

There's an up-to-date story on the roadbuilding program and what it means to business in our news section this week.

But we couldn't resist this photograph showing how highways were built half a century ago. From the files of the American Road Builders Assn. comes this view of one puffing, clanging steam shovel keeping a line of teams and dump wagons busy.

Keeping Cool

Chalk up another first for the steel industry. Lone Star Steel Co. reports on a water-cooled handrail installed in its pipe mill. It's believed to be the first such installation within the industry.

Two Lone Star employees, Bill Capps and Lawrence Reed, were responsible for its design and operation. Located on a steel crossover the handrail remains cool to the touch despite a furnace underneath radiating 1800-degree heat.

Puzzler

Here's an old one but maybe it's time to spring it again.

An amoeba grows to double its initial size and divides into two amoebae. Assume that the process takes a minute. A single amoeba is placed in a gold fish bowl. The bowl becomes full in 40 minutes. How long does it take for the bowl to become half full?

Puzzler Answer

The crime was committed by an amputee who used a platform on roller skates to get around. He earned his living by selling pencils. He killed the reckless driver because the man had cost him his legs in an accident.

Winners are: Rose Lantos, Industrial Welding Co., The Office Girls at Etiwanda Steel Producers, Inc., L. G. Lohmann, Hart & Cooley Mfg. Co., R. F. German, McDonnell Aircraft Corp., Arthur M. Seligman, and E. Novomesky, Curtiss-Wright Corp.

Need a Finish You Can Depend On?

It will pay you to consult

Somers

If you are having a problem with the finish on thinstrip brass, nickel, copper or alloys from .000175" to .010", Somers' nearly 50 years of specialized experience can lick it for you.
A typical example is the fine grain size provided on the exclusive Somers Unigrain® brass for deep drawn parts. This requires only a simple color buff after drawing for a polished finish; the fine grain eliminates heavy buffing and orange peel effect.
Whatever your problems with thinstrip metals, they're finished when you take them to Somers engineers for a complete analysis without cost or obligation.
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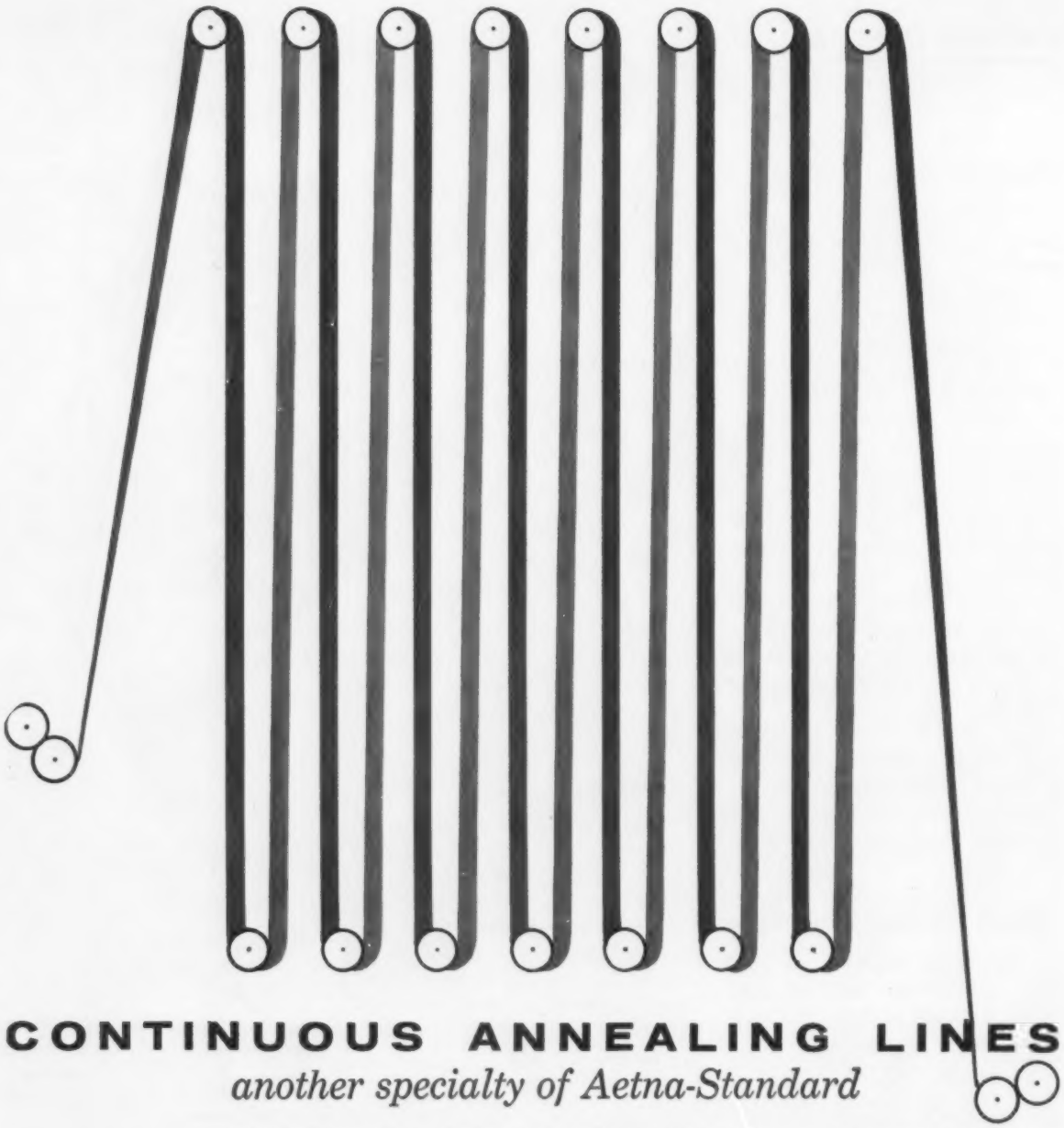

CONTINUOUS ANNEALING LINES

another specialty of Aetna-Standard

Like Continuous Galvanizing or Tinning, a Continuous Annealing Line requires good designing and rugged equipment.

Aetna has much experience in continuous processing lines, galvanizing, tinning and annealing. In fact, Aetna pioneered in continuous equipment. Two of the most recent high speed Aetna lines incorporate many new ideas and innovations, permitting sure tracking at high speeds of 1,000 feet and more.

What can Continuous Annealing do for your production and your costs? Aetna's sales engineers can produce some interesting figures.

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COMING EXHIBITS

Design Engineering Show — April 14-17 International Amphitheatre, Chicago. (Clapp & Poliak, 341 Madison Ave., New York 17.)

Welding Show—Apr. 14-18, Kiel Auditorium, St. Louis. (Banner & Greif, 369 Lexington Ave., New York 17.)

Powder Metallurgy Show — April 21-23, Sheraton Hotel, Philadelphia. (Metal Powder Assn., 420 Lexington Ave., New York 17.)

Tool Engineers Show—May 1-8, Convention Hall, Philadelphia, (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Foreign Metalworking—May 7-17, Coliseum, New York. (U. S. World Trade Fair, 331 Madison Ave., New York 17.)

Western Material Handling Show—May 8-10, Great Western Exhibit Center, Los Angeles. (Information: 2809 Sunset Blvd., Los Angeles 26.)

Southwestern Metal Show — May 12-16, State Fair Park, Dallas. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Foundry Show—May 19-23, Public Auditorium, Cleveland. (American Foundrymen's Society, Golf & Wolf Rds., Des Plaines, Ill.)

Packaging Show—May 26-30, Coliseum, New York. (American Management Assn., 1515 Broadway, New York 36.)

MEETINGS

APRIL

Copper And Brass Warehouse Assn., Inc.—Annual convention, Apr. 13-16, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1900 Arch St., Philadelphia.

(Continued on P. 16)

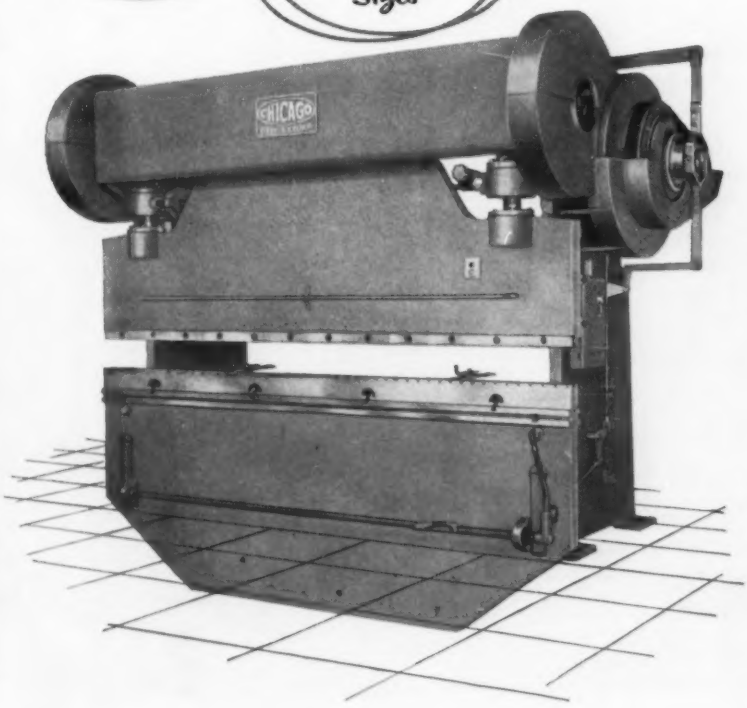
CHICAGO® PRESS BRAKES

for sheet metal and plates

Advanced Design

50 Standard Sizes

Capacities 11 to 450 tons



This is one of the Series D CHICAGO press brakes. It has a bending capacity of 10 feet by ¼ inch—150 tons. Over-all bending length is 12'-2".

Complete recommendations for any job on request.

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Hand and Power Bending Brakes • Special Metal-Forming Machines

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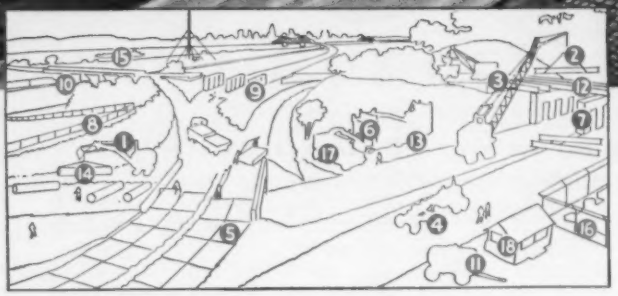

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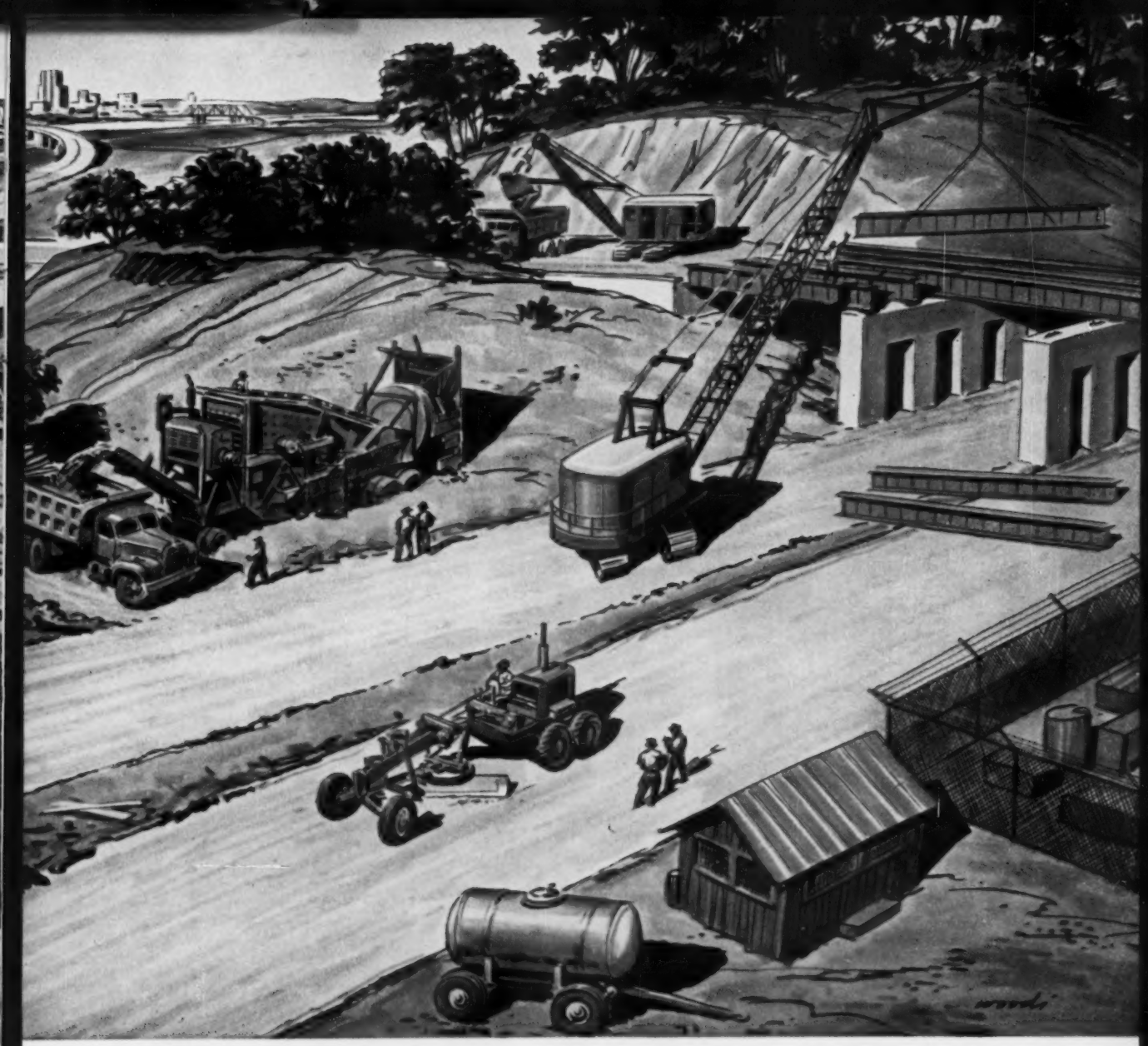
3. Wickwire Boom Pendants
4. CF&I Cutting Edges
5. Clinton Welded Wire Fabric
6. CF&I Industrial Screens
7. CF&I Reinforcing Bars (in concrete)
8. CF&I Woven Wire Fence & Fence Posts
9. Cal-Tie Wire
10. CF&I Rails, Spikes, Track Bolts and Tie Plates
11. Claymont Heads
12. Claymont Welded Steel Plate Sections
13. Claymont Fabricated Steel Parts
14. Claymont Large Diameter Pipe
15. Claymont Alloy Steel Plates
16. Realock Chain Link Fence
17. Wickwire Springs
18. Gold Strand Insect Wire Screening



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answering America's road call

Superhighways don't just happen. They are the result of careful planning by skilled engineers and builders . . . as well as the ability of manufacturers to have equipment and materials on the job site whenever and wherever they are needed. Today, America's accelerated roadbuilding program is making the task of these engineers, builders and manufacturers more challenging than ever before.

As a leading manufacturer of steel products for highways and other types of construction, CF&I pledges its wholehearted cooperation during the years ahead.

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth • Houston Kansas City • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle Spokane • Wichita • **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

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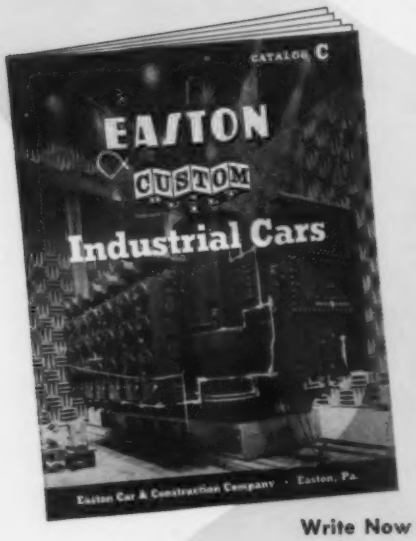
IDEAS for heavy duty materials handling



CUSTOM BUILT TRADEMARK

EASTON CATALOG C describes 39 different types of heavy duty EASTON industrial cars and trailers, with capacities from 2 to 500 tons, including motorized and automated units, for handling all kinds of loads.

IDEAS inspired by EASTON CATALOG C may save important time and money in your heavy handling operations.

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Portable Pyrometer Indicator Does Many Jobs

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The "MiniMite" Portable Potentiometer Indicator gives you laboratory accuracy in a rugged, versatile instrument. Use it conveniently for a wide range of temperature measurement, calibration and test purposes. Its dimensions are only 4" x 5" x 6"—weight is under 4 lbs. Accuracy is ¼ of 1% of scale range.

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Write For Bulletin 64-N

Thermo Electric CO., INC.
SADDLE BROOK, NEW JERSEY

In Canada:
THERMO ELECTRIC (Canada) LTD.,
Brampton, Ont.

EXHIBITS, MEETINGS

(Continued from P. 13)

The American Zinc Institute — Annual meeting, Apr. 14-15, The Chase-Park Plaza Hotels, St. Louis, Mo. Society headquarters, 60 E. 42nd St., New York.

The Metallurgical Society of AIME —41st Openhearth steel and blast furnace, coke oven, and raw materials conference, Apr. 14-16, Statler Hotel, Cleveland. Society headquarters, 29 W. 39th St., New York.

Lead Industries Assn. — Annual meeting, Apr. 15-16, Chase-Park Plaza Hotels, St. Louis, Mo. Society headquarters, 60 E. 42nd St., New York.

Steel Shipping Container Institute —Annual meeting, Apr. 14-18, Kenilworth Hotel, Miami Beach, Fla. Society headquarters, 600 Fifth Ave., New York.

Institute of Environmental Engineers—Annual meeting, Apr. 17-18, New Yorker Hotel, New York. Society headquarters, 9 Spring St., Princeton, N. J.

Scientific Apparatus Makers Assn. —Annual meeting, Apr. 20-24, El Mirador Hotel, Palm Springs, Calif. Society headquarters, 20 N. Wacker Dr., Chicago.

American Home Laundry Mfrs. Assn.—Annual meeting, Apr. 22-24, Boca Raton Club, Boca Raton, Fla. Society headquarters, 20 N. Wacker Dr. Chicago.

National Machine Tool Builders' Assn.—Spring meeting, Apr. 24-25, Edgewater Beach Hotel, Chicago. Society headquarters, 2071 E. 102nd St., Cleveland.

Grinding Wheel Institute — Semi-annual spring meeting, Apr. 30—May 1-2, Grand Hotel, Point Clear, Ala. Society headquarters, 2130 Keith Bldg., Cleveland.

In emergencies you want service . . . and fast!

You don't care *how* it's done . . . as long as you get the part you need *when* you need it. Yet, the fact that Clark has opened a new Central Parts Division in Chicago with over 4,500,000 stock parts under one roof *is* important to you.

For now, if your local Clark dealer cannot supply a specific part, his request to the Parts Division is processed immediately through a punch-card system, completing the order fast and efficiently. Thus, in an emergency, the part can be air-shipped to your dealer within 24-hours. This is Clark's assurance to you that you will have your trucks back on the job as quickly as possible.

Illustrated literature describing both the direct benefits and the methods of operation of this Division is available on request. For your copy, write to: Central Parts, Clark Equipment Co., Battle Creek, Michigan.

CLARK® EQUIPMENT

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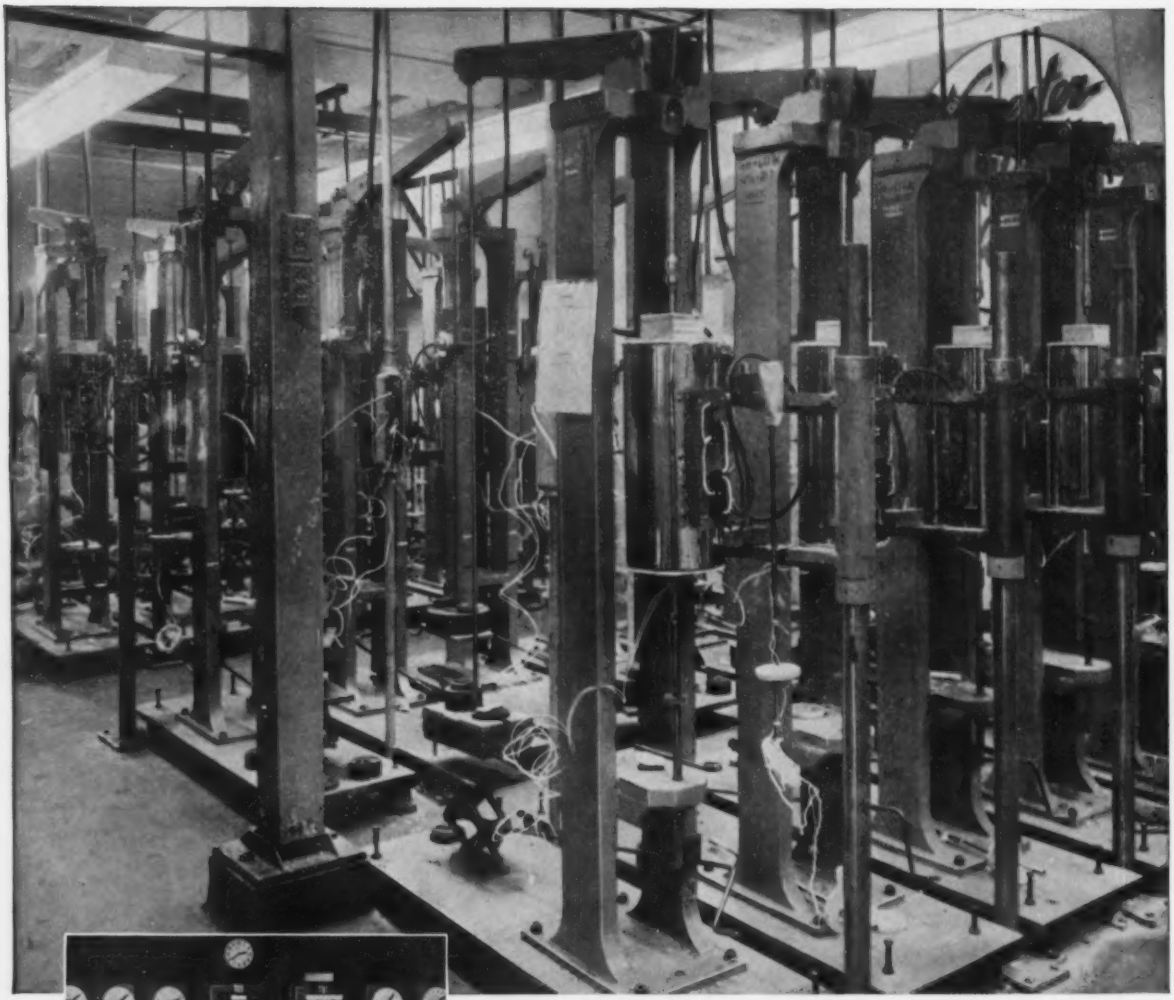
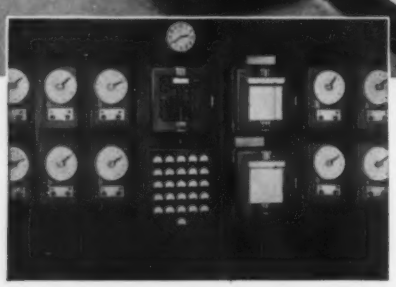




41 Speedomax® H Controllers Reduce Overshoot... Speed Recovery on Creep Rupture Machines

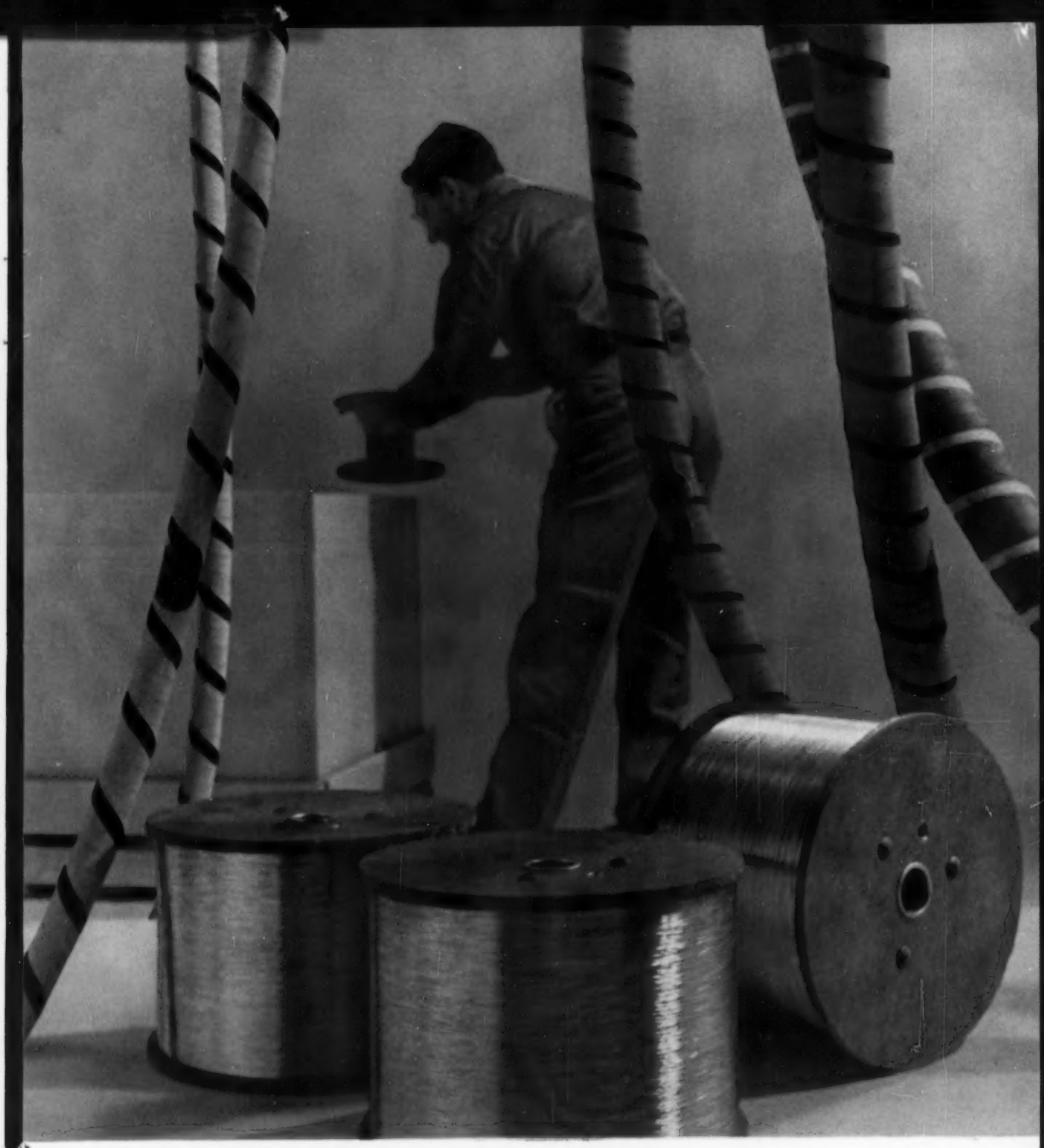
Here are only some of the creep rupture machines and Speedomax controllers at Wyman-Gordon, Worcester, Mass. To meet government specs for jet plane forgings made of titanium and special alloy steels, Wyman-Gordon has installed 2 banks of creep rupture testing furnaces with space-saving Speedomax H proportioning control. This combination assures them of quality control on a production basis . . . permits them to turn out part after part which will meet the stresses induced in jet propelled aircraft.

To keep production moving, Speedomax H D.A.T. control enables operators to bring furnaces up to temperature in minimum time. Rate of approach, in most cases, eliminates overshoot . . . speeds recovery time after sample change. By continuously regulating heat input in proportion to furnace needs, this Speedomax H control holds temperature of furnaces within ±2 F and in addition, eliminates the need for manually readjusting auto transformers.

Additional instrumentation includes four multiple-point Speedomax G recorders for each bank of furnaces, and 80-point and 76-point Model D Speedomax G indicators for checking furnace temperatures at any time from a central location.

Why not investigate Speedomax H when installing your next heat treating furnace—whether it's electric or fuel-fired, continuous or batch. A phone call or letter to your nearest L&N office —or to 4956 Stenton Ave., Phila. 44, Pa.—will bring you more information.

LEEDS & NORTHRUP
Instruments — Automatic Controls • Furnaces



Roebling Hose Reinforcing Wire...

The best things come in no-charge packages

When you buy Roebling Hose Reinforcing Wire it is delivered to you on no-charge spools that mean savings to you.

This modern method of packaging does away completely with deposits and the bookkeeping involved; it contributes, too, to lower freight costs. Thus, you avail yourself of a precision-made and quality controlled product, without any handling, shipping and inventory inconveniences.

Roebling Hose Reinforcing Wire, used for braiding reinforcement, is produced in a complete range of sizes. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling...Your Product is Better for it

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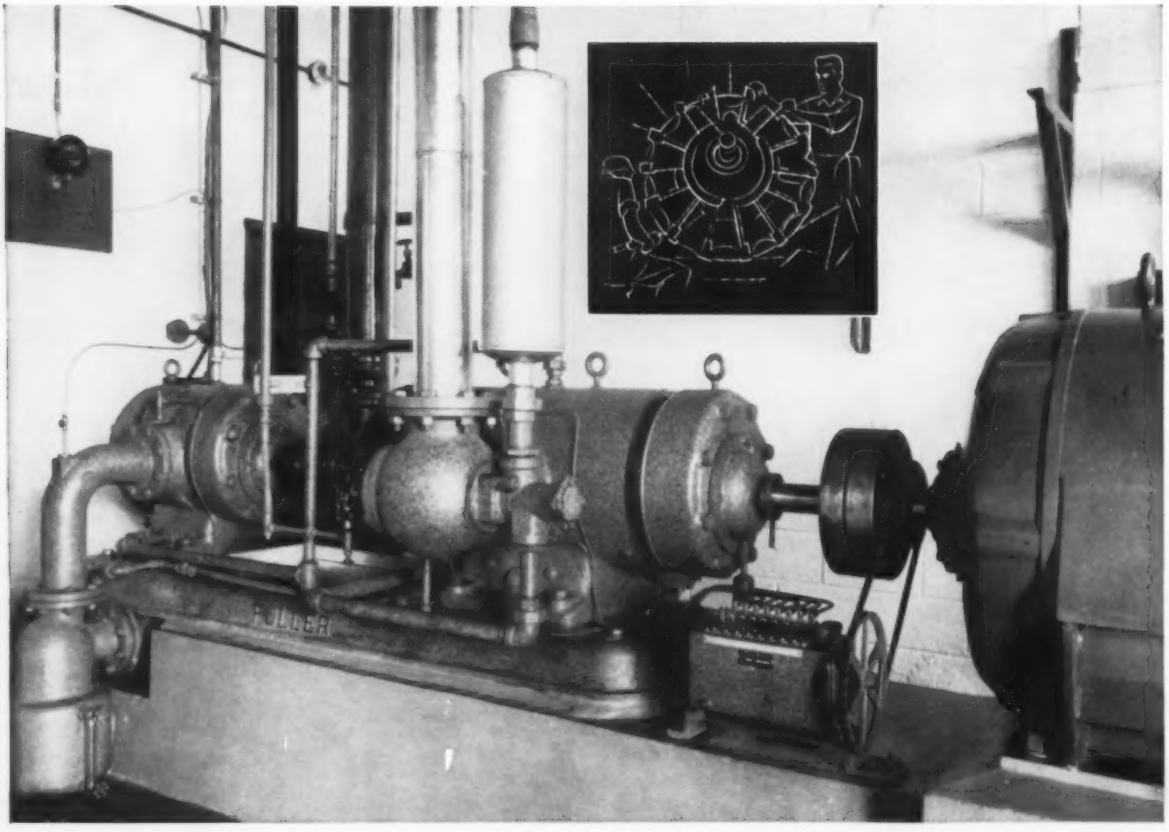

WHY DID AIRWORK SPECIFY A FULLER AIR COMPRESSOR?

Here's what the Vice President-Operations of Airwork Corporation, one of the nation's leading aircraft overhaul companies, writes about Fuller Model C-150-150H Rotary Air Compressors.

"We were running out of air capacity, and had decided that we would like to get rid of the maintenance problems inherent in a piston type air compressor.

"The Fuller compressor with its fewer moving parts and favorable price range met our basic requirements.

"We then checked on Fuller compressor performance through our close contacts with a leading manufacturer of aircraft engines. Their opinion was very favorable. We think Airwork has made the right decision."

Here are the features that sold Airwork on a Fuller Compressor:

- Wide seal between rotor and bottom of cylinder, assuring high volumetric efficiency.
- Rotary design assuring vibration-free flow of air.
- Direct drive.
- Compact space-saving installation.
- Simple foundation.
- No valves to leak or seats to grind.
- Few moving parts, keeping maintenance time to minimum.
- Designed for continuous duty service

When your plant needs reliable air power, call on Fuller. To get all the facts on Fuller Rotary Compressors for capacities up to 3300 C.F.M. and pressure to 125 pounds, write today.

Fuller

FULLER COMPANY GENERAL AMERICAN TRADE MARK

FULLER COMPANY C-323 4914

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SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

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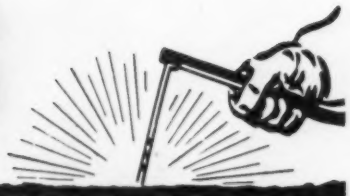
PIONEERS OF HIGH-EFFICIENCY VANE TYPE ROTARY COMPRESSORS SINCE 1930

Weldynamics



ARC WELDING AT WORK CUTTING COSTS

WHY WELDORS AND MANAGEMENT LIKE IMPROVED FLEETWELD 47

Improved Fleetweld 47 gives that fast, easy operation . . . yet it isn't limited to the flat position.

Weldors appreciate the smooth flowing action!

Management loves the cost-cutting speed and versatility.

Try Improved Fleetweld 47 on your next flat and uphill production job. You'll love it too! It conforms to AWS E-6013 and E-6014.

Write for the *new* Weldirectory Bulletin 7000.1.

Lincoln men who know Weldynamics will help you establish procedures, select equipment and electrodes for most efficient, low-cost welding.

The World's Largest Manufacturer of Arc Welding Equipment

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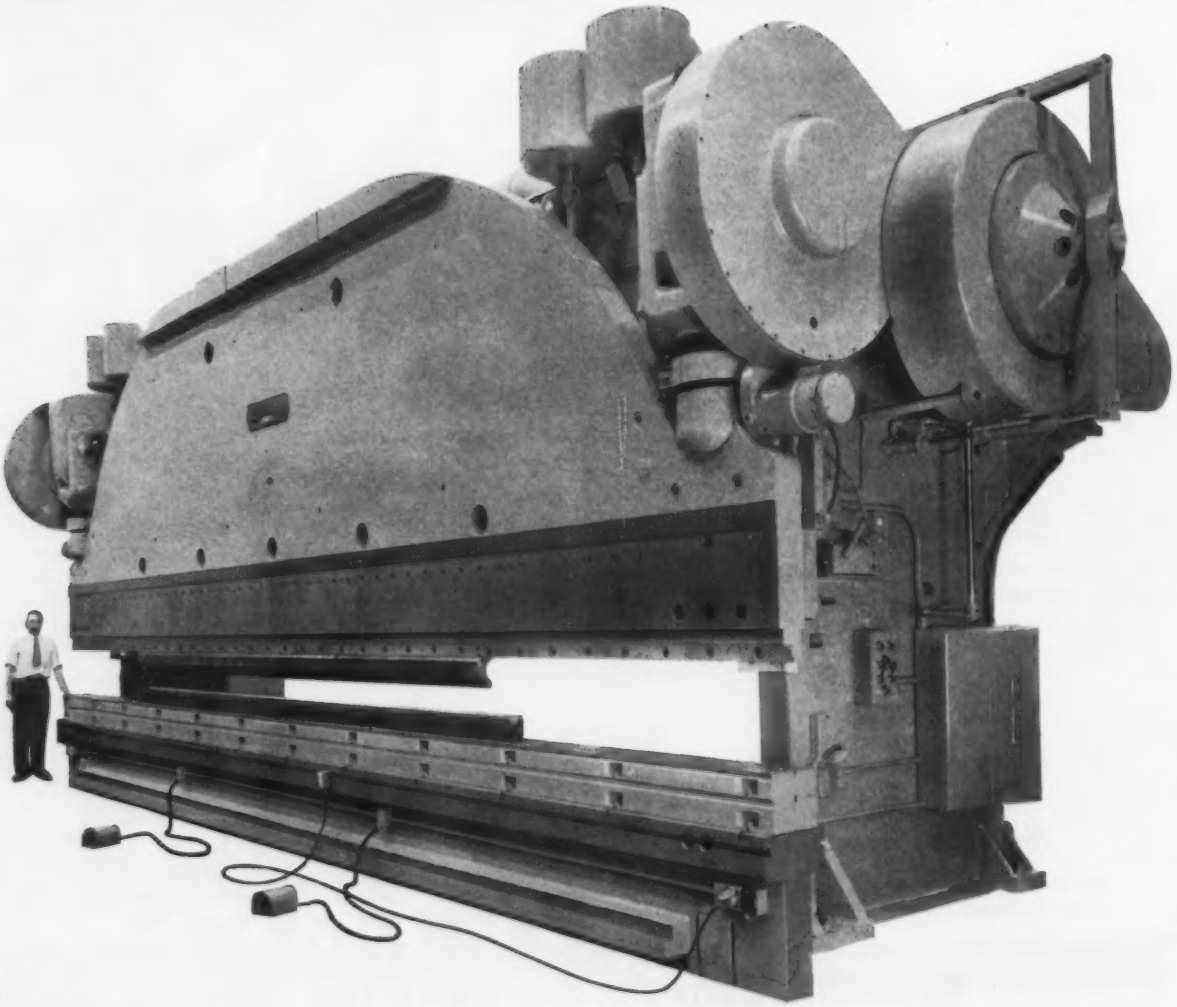
30 to 1400 tons (and up)



Cincinnati Press Brakes deliver maximum "earning power"

Alert production people are finding important new applications for Cincinnati Press Brakes—for forming, notching, punching, and multiple operations—in order to save money on existing products, or make money on new ones.

Cincinnati not only provides 15 standard machine capacities to meet your tonnage requirements, with the built-in features that insure accuracy, production, and long life. In addition, Cincinnati offers a complete tooling service:

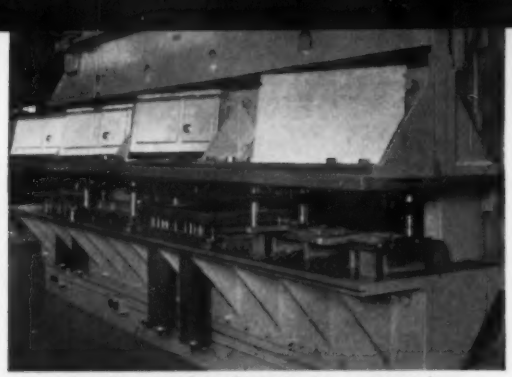
1. Design—Our Application Engineers can help you design the proper tooling for maximum product quality and economy.

2. Manufacturing—From our large stock of die steel, our machining and assembly facilities can produce—promptly—the finished tooling you require.

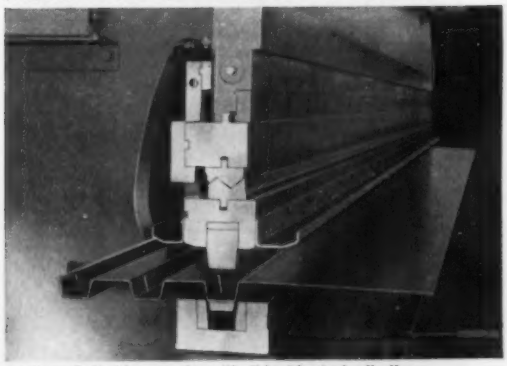
3. Testing—All Cincinnati Press Brake tooling is proven by rigid tests and inspection before shipment.

We invite you to use these valuable services . . . to get more out of the press brakes you now have, or to make the most productive choice of new machines for your current and future needs.

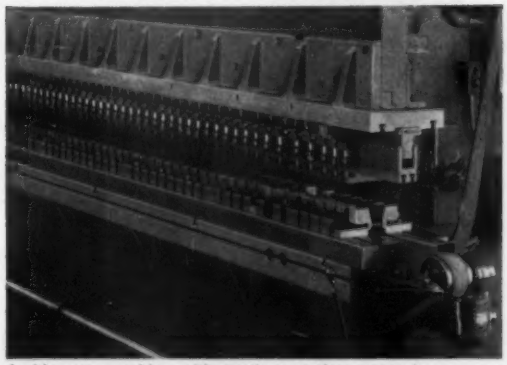
Write Dept. B for Catalog B-5.



progressive die setup for refrigerator top components



steel roof decking made with "double-decker" dies



double row punching with continuous slug removal

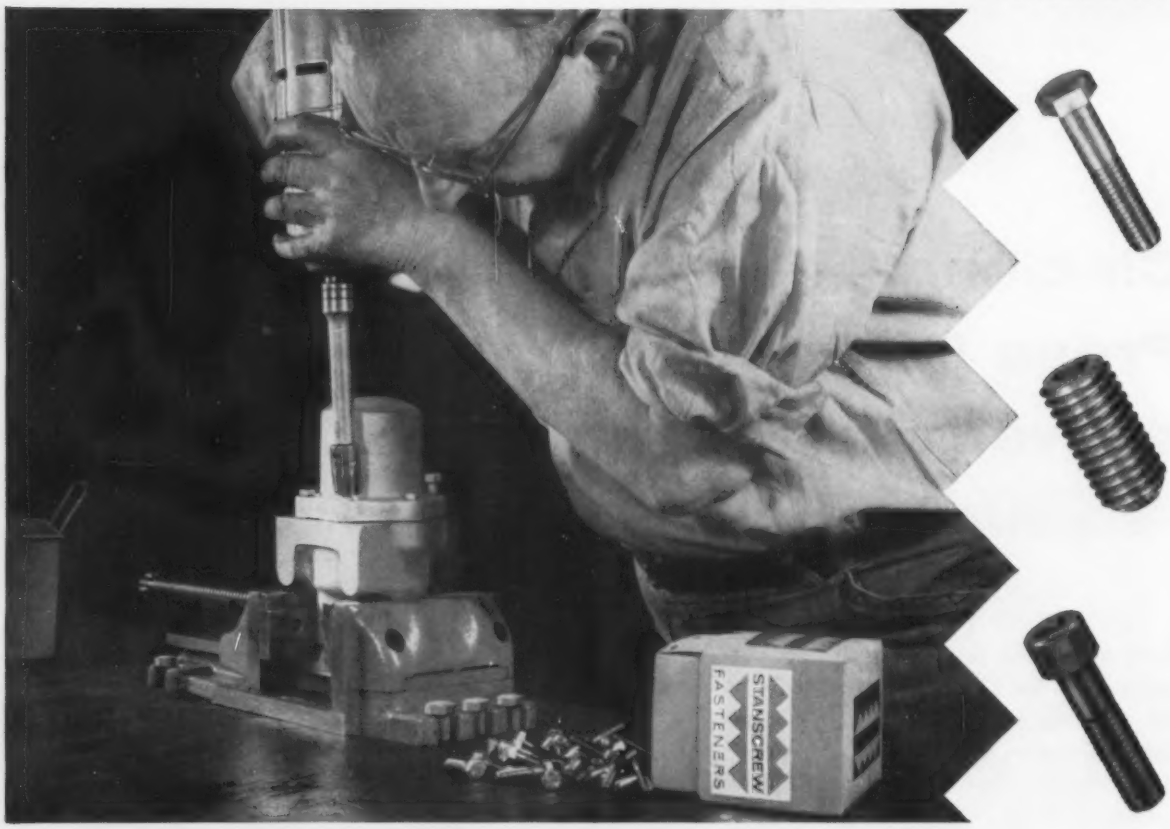
forming corrugated culvert sections in successive hits

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.

IT PAYS TO STANDARDIZE ON **STANSCREW**



Stanscrew service cuts rejects, speeds assembly for valve manufacturer

A prominent manufacturer of 4-way valves for freon was having trouble on his assembly line. His fasteners, tightened to an extreme degree to prevent seepage of the gas, were breaking on too many occasions. This meant complications in assembly and a high reject rate—which increased production costs substantially.

One of Stanscrew's fastener specialists, called in by a Stanscrew distributor, quickly found the answer. He recommended a standard cap screw and had staff engineers work out the precise torque which should be applied to insure a complete seal at all gaskets, yet eliminate any possibility of fastener breakage. By following these recommendations, the manufacturer has eliminated the problem of fastener breakage, and substantially reduced his reject rate.

Stanscrew offers over 4,000 standard fasteners . . . including a complete selection of socket, set, and cap screws. All are produced under rigid quality control methods and incorporate the lessons learned during 85 years of fastener manufacture. All 4,000 are always in stock and quickly available.

For the answer to your fastener problem, call your Stanscrew distributor. He will have a Stanscrew fastener specialist promptly study your operation and make specific recommendations.

STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

"We have been well pleased..."

writes a foremost manufacturer about the metal-melting protection of Norton refractories

High melting, long-lasting ALUNDUM*, CRYSTOLON*, MAGNORITE*, FUSED STABILIZED ZIRCONIA and other Norton refractory materials are Norton ℞'s — *engineered and prescribed* for longer, lower cost service across the range of furnace applications.

For ℞'s that will help you maintain hot metal schedules and reduce shutdowns in your own processing, call in your Norton Refractories Engineer. Or write to NORTON COMPANY, Refractories Division, 203 New Bond St., Worcester 6, Mass.

NORTON
REFRACTORIES
Engineered... ℞ ...Prescribed

Making better products... to make your products better

NORTON PRODUCTS
Abrasives • Grinding Wheels
Grinding Machines • Refractories
BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones
Behr-cat Tapes

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

VACUUM METALS CORPORATION
DIVISION OF CRUCIBLE STEEL COMPANY OF AMERICA
P. O. BOX 977 — SYRACUSE 1, N. Y.
SYRACUSE 8-3571

March 27, 1957

Norton Company
Worcester 6
Massachusetts

Gentlemen:

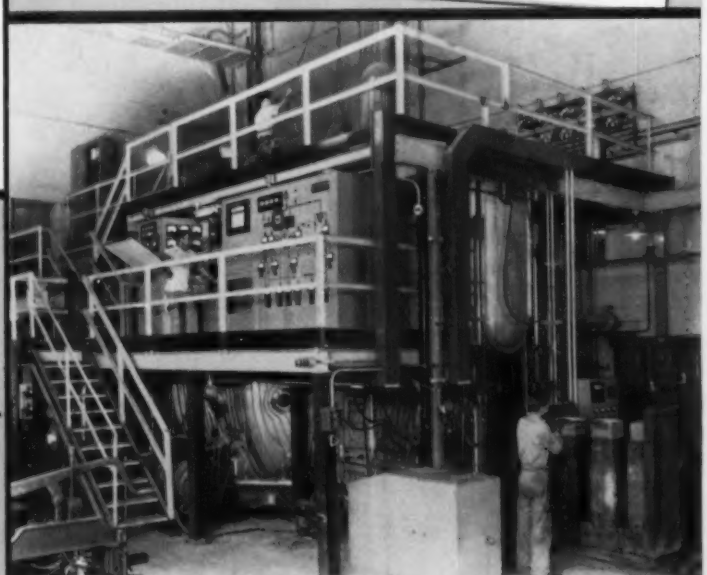
I am enclosing a general view of our newest vacuum melting furnace and a view of the crucible during a melt. This furnace is the largest high vacuum induction furnace in the country and has a capacity of 3000 pounds per heat.

We have successfully used a Norton ramming mix for rammed linings in this and in our 700 pound furnace. Your prefired shapes of Magnorite and Alundum have been used for pouring lips and pouring tubes. Your refractory ramming mixes have been used as a backing for Norton Magnorite and Alundum crucibles in laboratory furnaces for nearly ten years. We have been well pleased with the quality and performance of your products.

Very truly yours,

A. E. Franks
Division Superintendent

AEF/a
cc: Michael Stumm



Largest of all high vacuum induction furnaces in the U.S. The accompanying letter from Vacuum Metals Corporation, a Division of Crucible Steel Company, describes how Norton refractory cements and prefired shapes aid in the advanced performance of this huge, modern metal-melting equipment.

Westinghouse Life-Line A motors save $200 a year in rewinding costs alone

...at Rumford Chemical Works, Rumford, R.I.

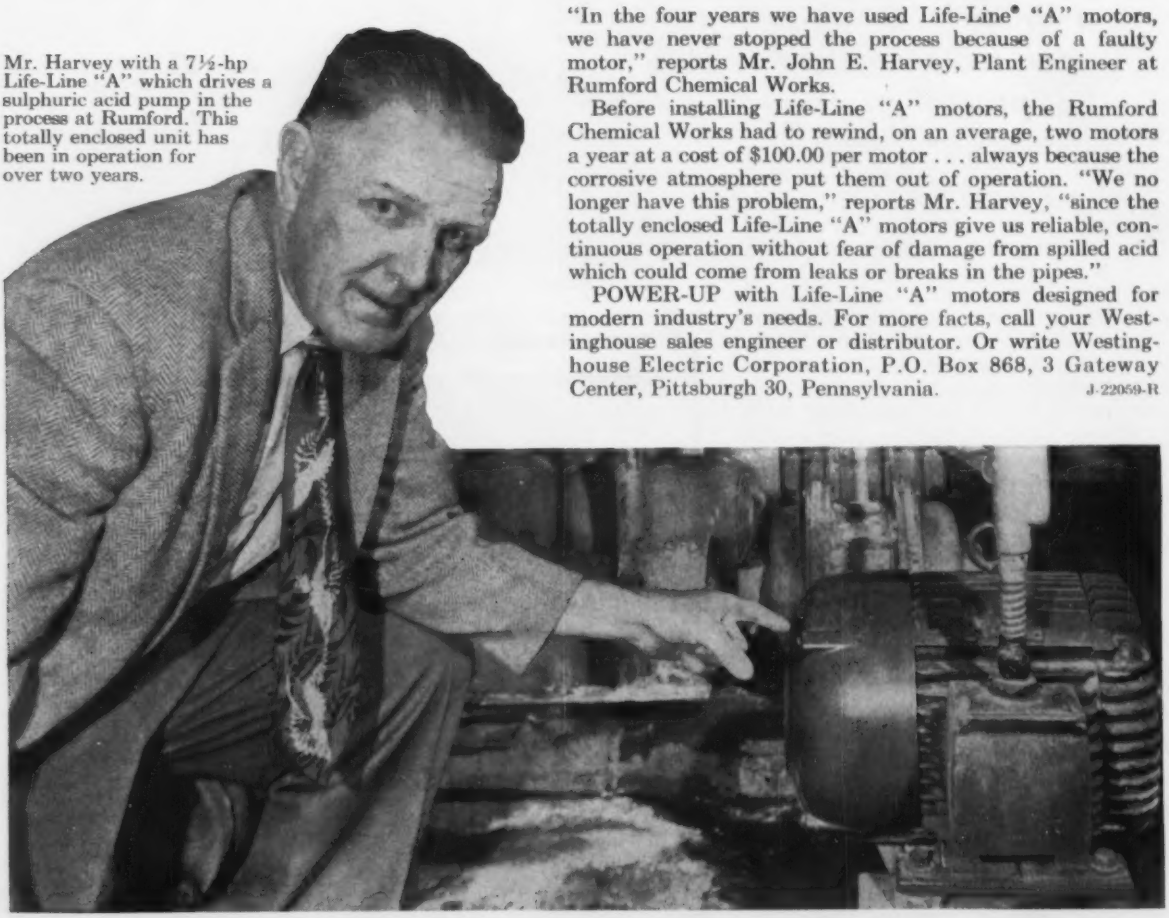
Westinghouse motors are reliable for 24-hour, 7-day week operation in sulphuric acid manufacture

Mr. Harvey with a 7½-hp Life-Line "A" which drives a sulphuric acid pump in the process at Rumford. This totally enclosed unit has been in operation for over two years.

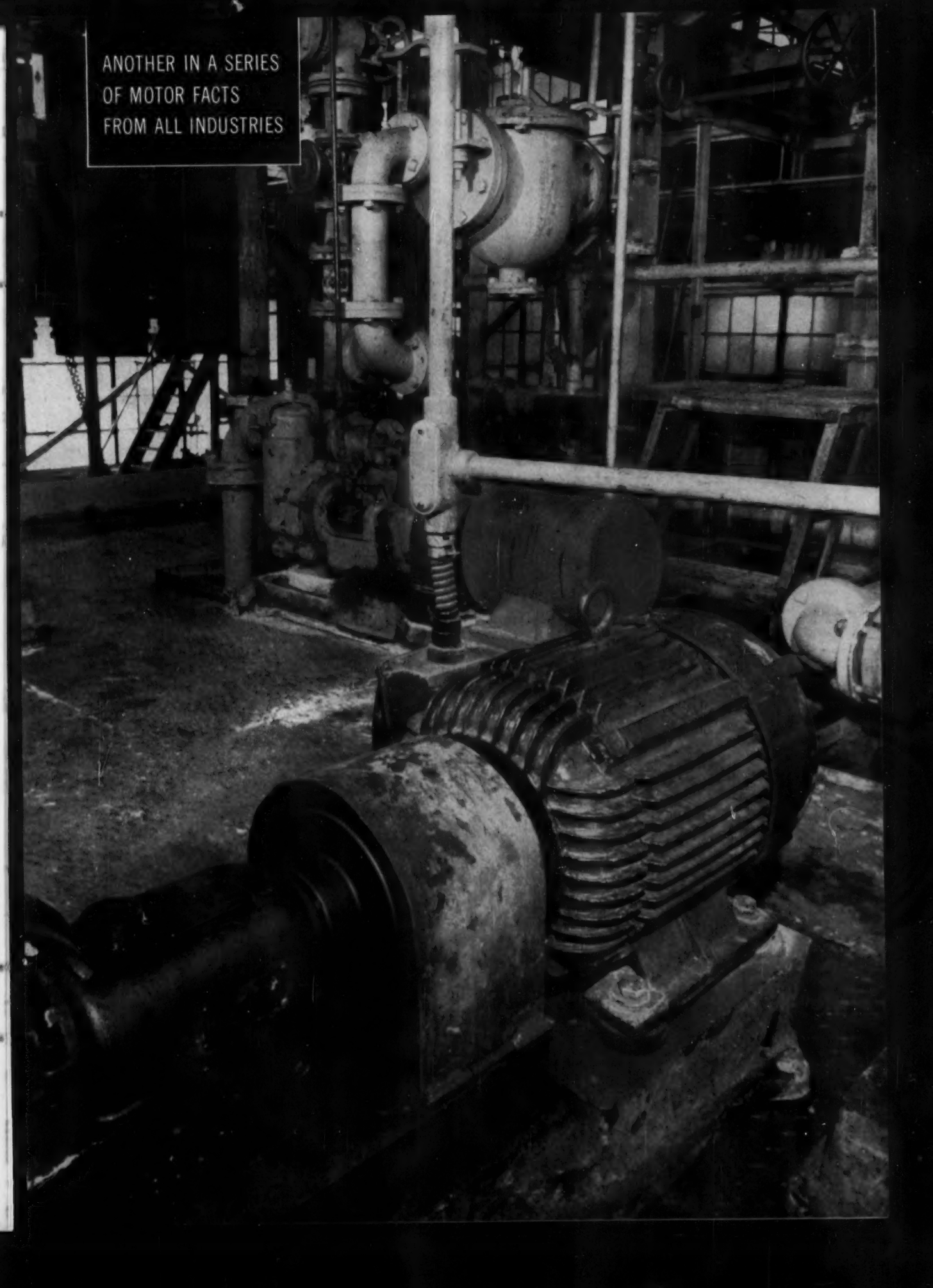
"In the four years we have used Life-Line® "A" motors, we have never stopped the process because of a faulty motor," reports Mr. John E. Harvey, Plant Engineer at Rumford Chemical Works.

Before installing Life-Line "A" motors, the Rumford Chemical Works had to rewind, on an average, two motors a year at a cost of $100.00 per motor . . . always because the corrosive atmosphere put them out of operation. "We no longer have this problem," reports Mr. Harvey, "since the totally enclosed Life-Line "A" motors give us reliable, continuous operation without fear of damage from spilled acid which could come from leaks or breaks in the pipes."

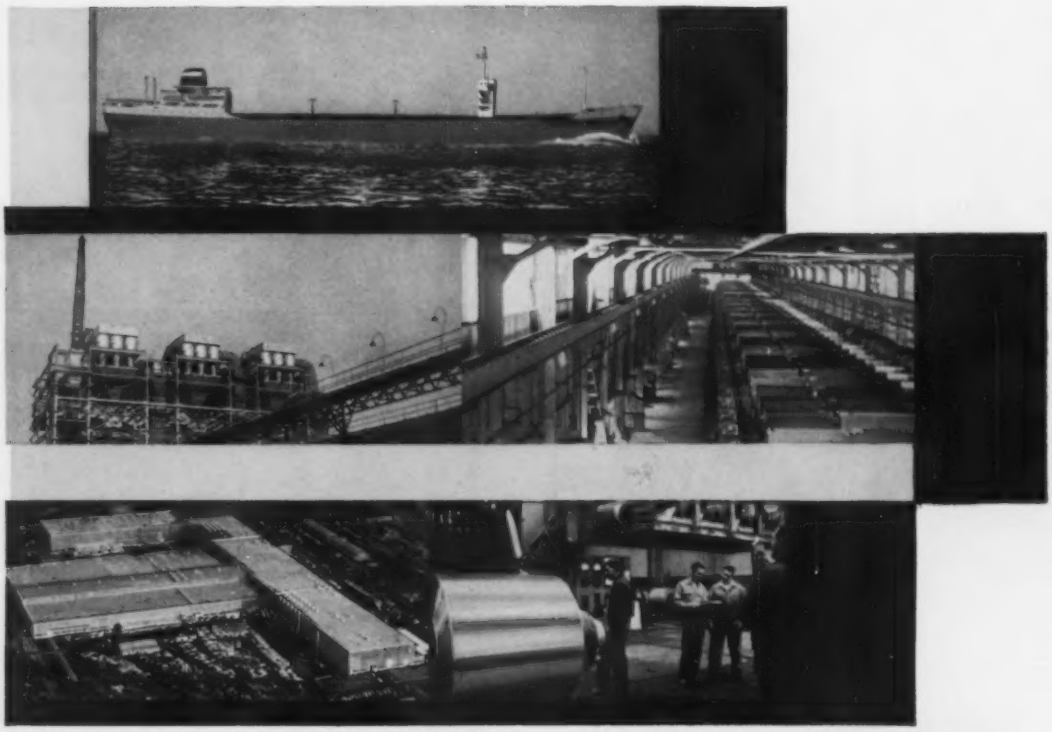
POWER-UP with Life-Line "A" motors designed for modern industry's needs. For more facts, call your Westinghouse sales engineer or distributor. Or write Westinghouse Electric Corporation, P.O. Box 868, 3 Gateway Center, Pittsburgh 30, Pennsylvania. J-22059-R



YOU CAN BE SURE...IF IT'S Westinghouse


ANOTHER IN A SERIES
OF MOTOR FACTS
FROM ALL INDUSTRIES

Full integration makes Olin Aluminum a dependable source for you...



Behind every finished order of custom-tailored Olin Aluminum lies a fully-integrated chain of production facilities reaching all the way to the ore fields at Surinam.

Control over every stage of the production of your Olin Aluminum—from ore field to alumina and reduction plants, and to strategically located processing mills—assures you of a dependable source of supply. Now and tomorrow.

Of equal importance, the services of Olin Aluminum Sales Representatives, Field Engineers and Production Engineers, working in cooperation with your own staff, assure you the kind of special customer satisfaction that has been an Olin Mathieson Service principle for years.

For service now, write: Aluminum Division, Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, New York.

® AND "OLIN ALUMINUM" ARE TRADEMARKS

OLIN MATHIESON CHEMICAL CORPORATION

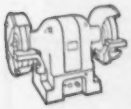
OLIN ALUMINUM

Symbol of New Standards of Quality and Service in the Aluminum Industry

3 ways to cut costs in grinding–

–all power-built by Black & Decker!

Whether you must take the work to the tool or bring the tool to the work, Black & Decker gives you a choice of grinders to save time and money.



Powerful B&D Bench Grinders save steps—speed up jobs when strategically located about your shop. Smooth running B&D motors give more constant speed, regardless of load. Four models: 6″ to 10″ sizes.

Precise light-weight B&D Die Grinders deliver top quality work at high speeds whether shaping, burring or grinding. Handle as easily as a pencil. Vibrationless—perfectly balanced from one end to the other. Smooth operation—perfect for carbide bit use. In sizes #8, #12, #20.

Time saving B&D Portable Grinders go to the work where surfaces must be prepared for welding and finishing. Perfect for smoothing welds, snagging and grinding castings and countless other grinding, cleaning and buffing jobs. 2½″, 5″ and 6″ sizes available.

See them today in your shop. Mail coupon for a free demonstration or more information.

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☐ Please arrange a demonstration of your ..... grinder. I am also interested in the tool(s) checked below.

☐ Please send additional literature.

Name..... Title.....

Company.....

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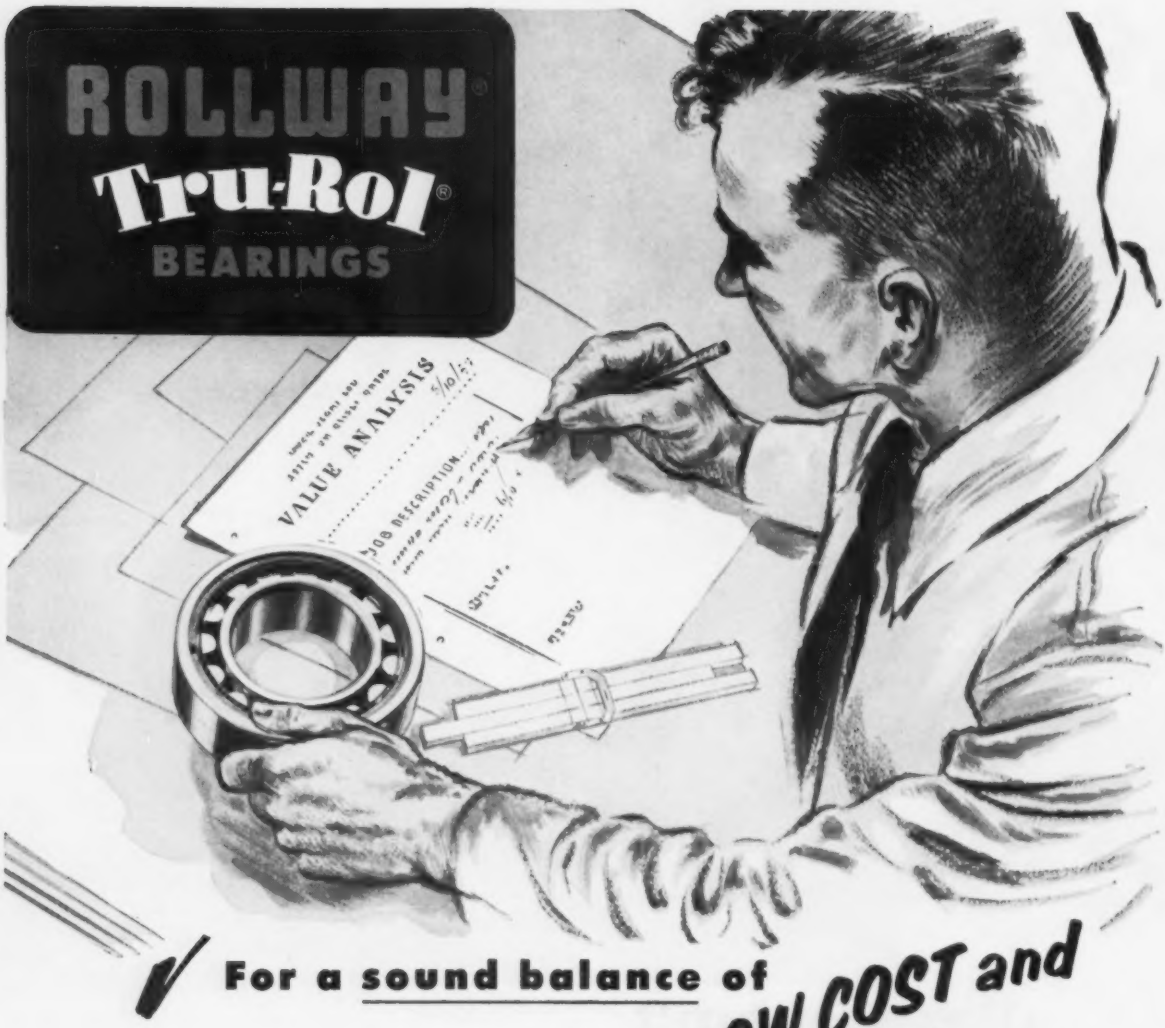
City..... Zone..... State.....

☐ Drills ☐ Screwguns® ☐ Magnetic Drill Presses ☐ Sanders



For a sound balance of LOW COST and HIGH PERFORMANCE

When you need maximum precision bearings, buy them. They'll save you money. Rollway has them in all types and sizes.

But in hundreds of applications, maximum precision means *unused* precision. The speed, load and life-expectancy demands are not critical. For these spots, Rollway's Tru-Rol Bearings are engineered to give all that is required in performance at worthwhile savings in cost.

Maximum-Type Design and Construction Principles

The Tru-Rol segmented steel retainer is the strongest, most durable available in commercial-grade bearings. Its separator segments are formed to the curvature of the roller for true axial alignment. In combination with rollers crowned to provide equal load distribution, it withstands heavy shock and reversing loads over long periods.

For all the precision and performance you need and can use in non-critical applications, ask a nearby Rollway Service Engineer to brief you on Rollway Tru-Rol characteristics and versatility.

ROLLWAY BEARING COMPANY, INC.
SYRACUSE, NEW YORK

ENGINEERING OFFICES: Syracuse • Boston • Chicago
Detroit • Toronto • Pittsburgh • Cleveland
Milwaukee • Seattle • Houston • Philadelphia
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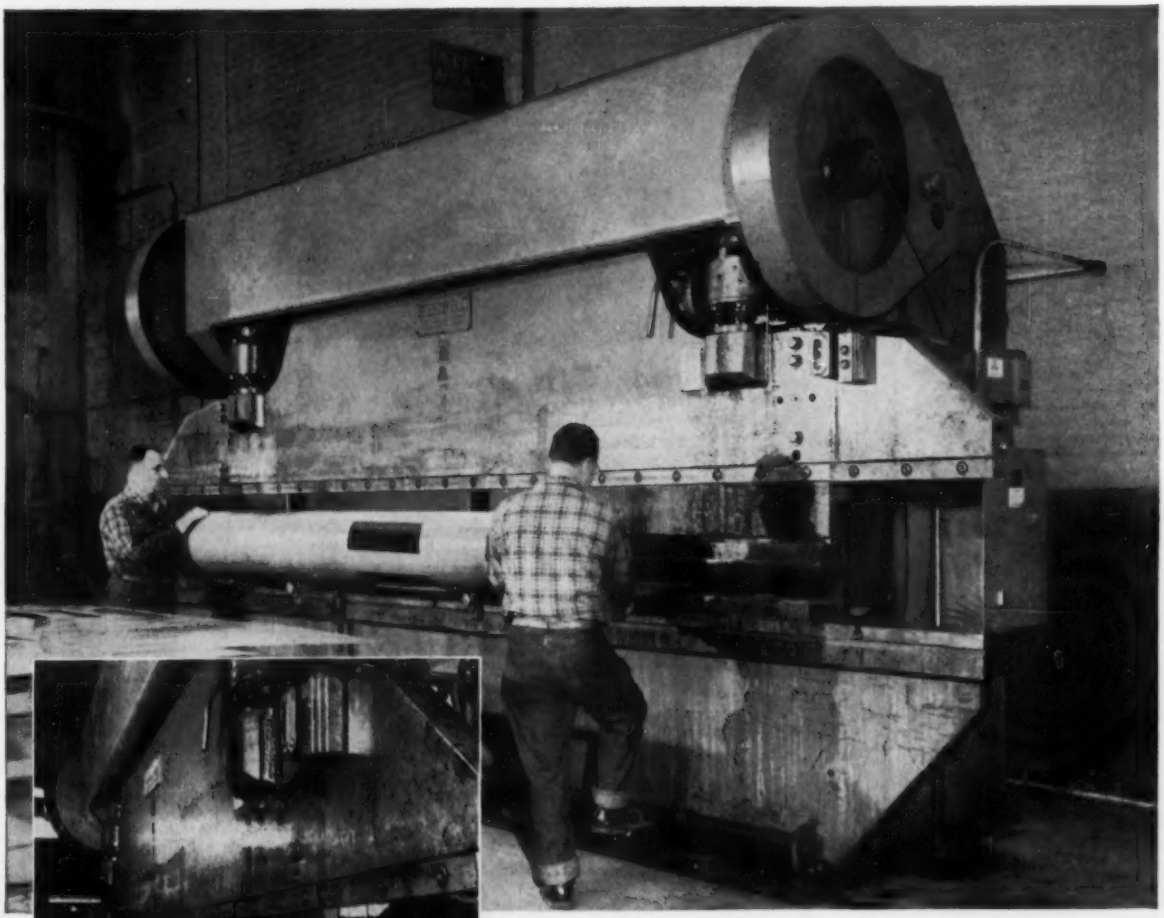
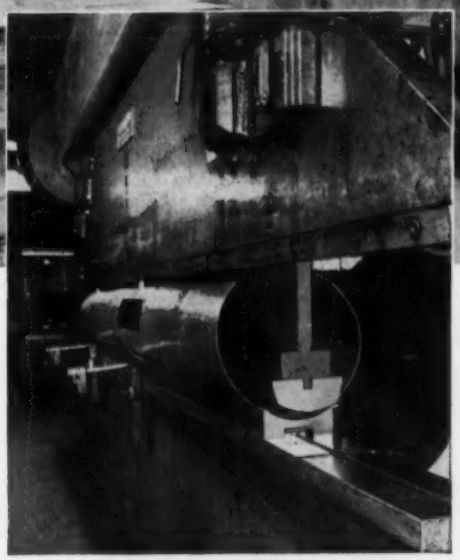
COMBINE AUGER TUBES

25 to 50 Made Per Hour at Massey-Harris-Ferguson, Ltd.

Steelweld Brake in service since 1950. Bed and ram are 18'-0" long including 2'-0" extensions at both ends. Bending capacity rated at 12' x 5/16".





Flat metal is quickly formed into a cylinder by a series of pressure contacts with this die arrangement.

AUGER tubes for combines made at Massey-Harris-Ferguson, Ltd., Toronto, are produced at rates of 25 to 50 per hour, depending upon conditions, with a Steelweld Brake. The tubes are from 10 to 16 feet long and made of 16 gauge steel.

This job represents one of a multitude performed at low cost on this brake, which is used for many bending and metal-forming operations required for the various farm implements built by Massey-Harris-Ferguson.

Steelwelds are popular with farm machinery manufacturers and have been serving many for years. They perform accurately, keep going continuously on long production runs without need of frequent adjustments, tinkering and maintenance. They are easy and safe to operate. Dies are quickly changed.

Because Steelweld Brakes are heavily built machines loaded with features that will help you, it will be to your interest to give them serious consideration when additional brakes are needed.

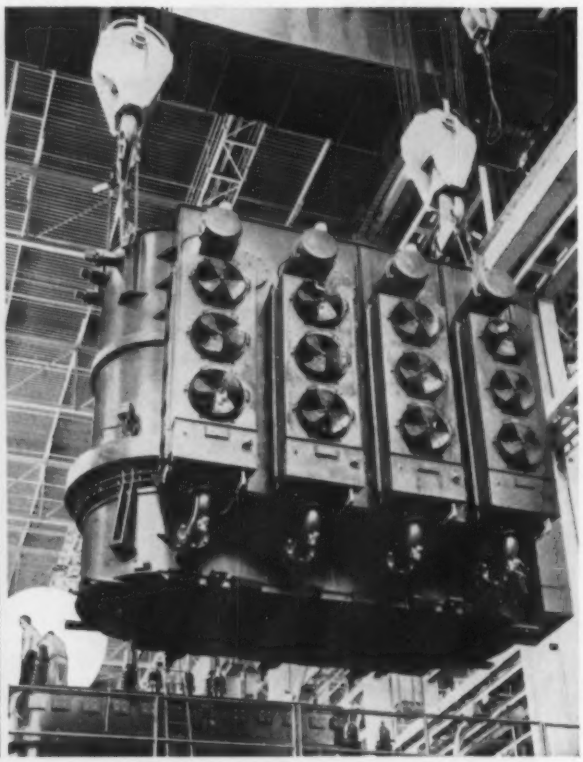
STEELWELD
PRESS BRAKES

Write for free copy of Catalog No. 2010
Gives construction and engineering details

STEELWELD DIVISION • THE CLEVELAND CRANE & ENGINEERING CO., 4868 E. 281ST ST. • WICKLIFFE, OHIO

ACCO for Better Values

Acco Registered® Slings–Chain or Wire Rope



Why different loads require different slings

Your rigger knows that different loads need different slings because of varying factors such as shape, weight, material, finish, protruding sharp corners, extremes of temperature.

On some jobs chain is best. On others the characteristics of wire rope make it the first choice. On still other jobs, wise riggers know that combinations of chain and wire rope will provide the greatest lifting economy.

No matter what type is called for, you can be sure of the safest slings and the best values in ACCO *Registered* Slings. From this one source you can get unbiased information based on actual know-how.

And you can get the exact slings your rigger should have.

One of the recent improvements is the new shaped Master Link now provided without extra cost on all ACCO *Registered* Slings, chain or wire rope. This link gives 18% greater resistance to distortion with no increase in weight. It is another reason why ACCO *Registered* Slings are recognized as the standard of efficiency and safety.

All ACCO *Registered* Slings are proof-tested, registered and identified for your greater assurance of safety.

• • •

Tell your distributor you'd prefer ACCO *Registered* Slings.

WHAT "ACCO REGISTERED" MEANS

1. The best material
2. Unit safety factor (on bodies, rings, links, hooks)
3. Proof test of complete sling to twice the working load limit
4. Actual field service test of each design
5. Metal identification ring or tag on each sling
6. Signed Registry Certificate with each sling

AMERICAN CHAIN & CABLE
BRIDGEPORT, CONN.

ACCO

Atlanta, Boston, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Wilkes-Barre, Pa., York, Pa.
In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

I call KE for plant expansion or new facilities

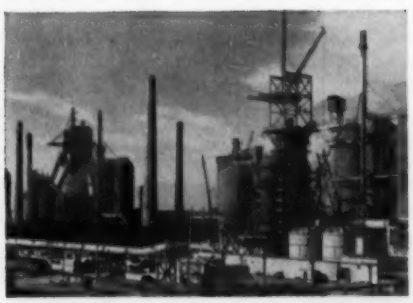
N call KE for plant expansion or new facilities

G call KE for plant expansion or new facilities

E call KE for plant expansion or new facilities

N U I T Y

has made KE a major engineer-contractor serving Steel



At India's mammoth Tata works, at Jones & Laughlin, at Kaiser Steel—Kaiser Engineers' ingenuity advances the art of making steel.

KE can take your development thoughts from a gleam in your eye through start-up. KE performs any part—economic analysis, plant location, engineering, design, procurement, expediting, construction. One contract can cover all.

For your next plant or expansion, take advantage of KE's cost-saving ingenuity and wide experience in Steel.

KAISER ENGINEERS engineers—contractors
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Division of Henry J. Kaiser Company • Oakland 12, California • New York, Pittsburgh, Washington, D.C., Buenos Aires, Calcutta, Dusseldorf, Montreal, Rio de Janeiro, Sydney, Tokyo

4364

JOBBING SHOPS LIKE CECOSTAMP'S VERSATILITY AND OPERATING ECONOMY

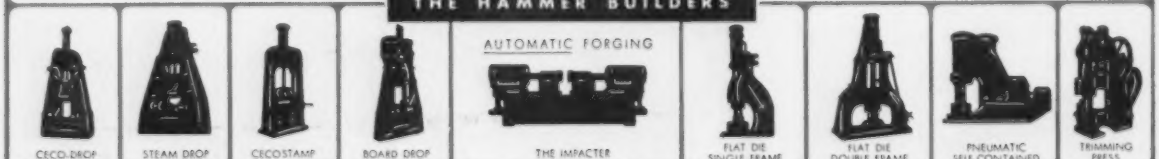
The modern sheet metal jobbing shop shown above uses four Cecostamps—one—30 x 24, two — 66 x 48, and one — 96 x 60, forming titanium, stainless and cold rolled steel, terneplate, aluminized metal and aluminum. The bulk of their work is experimental runs for aircraft, automotive and defense industries. Cecostamps have enabled them to meet both quality requirements and delivery dates—with a saving in production costs too!

The variety of blows and "squeezes" available on the Cecostamp, the wide range of shapes that can be made, afford a versatility appreciated by jobbing shops. In addition, they like the adaptability of the Cecostamp for coining, embossing and other special operations. The use of inexpensive zinc-alloy (or even wood) dies for short runs means money-saving without sacrificing quality. Concentration of controls and the immediate response of the ram to the movements of the operator provide an efficiency of operation that reduces fatigue and promotes higher production capacity—and the Cecostamp uses air only when it is in operation—a novel shut-off valve cuts off the air when the Cecostamp is idle. *Write for our Bulletin 30-L-5.*

CHAMBERSBURG ENGINEERING COMPANY . . . . . CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS



MOLY NEWS

CLIMAX MOLYBDENUM, 500 FIFTH AVENUE, NEW YORK 36, N. Y.

Chrome-Moly Steels Prove Ability To Resist Wear and Abrasion, Cut Costs

Can be Adapted to a Wide Range of Uses

To offset rising equipment and maintenance costs, the savings possible with wear-resistant alloy steels are receiving increasingly wide attention, in a growing number of industries.

Two types of "Chrome-Moly" steels show exceptional resistance to abrasion and wear under toughest conditions. Both have substantially cut liner costs and shutdown time in grinding mills. Both are suitable for a variety of other industrial applications because they combine wear resistance, favorable first cost, freedom from premature failure by breakage or spalling, resistance to flow in service, consistently uniform performance and adaptability to specific designs.

The two types are Pearlitic (250-450 BHN) and Martensitic (450-700 BHN). Carbon and alloy contents and heat treatments of both types can be varied to suit specific applications.

Note that the spiral wear pattern is clockwise, even though the mill's rotation is counterclockwise. Type 2 Martensitic steel is used here.

For an article on the use of Chrome-Moly steels, send for "How to Select Chrome-Moly Steels for Ball and Rod Mill Liners" by T. E. Norman, reprinted from Engineering and Mining Journal. Circle #1 on the coupon.

New Use For Super-Strength Structural Steels

Today, gasoline trailer tanks are built of super-strength structural steels for a good reason. The steels have high strength/weight ratios. This factor enables builders to design tanks that carry greater payloads and still meet legal gross weight limits. And the extra capacity pays for the higher trailer cost in a few months!

This use is only one of countless possibilities for utilizing the steels' minimum yield strengths of 55,000 to 150,000 psi . . . and their many other desirable properties. *For more information, including tradenames and compositions, ask for "Super-Strength Structural Steels." Circle #2.*

Sums Up Moly's Resistance to Corrosion

A new paper, "Corrosion Resistance of Molybdenum and Molybdenum-Base Alloys," based on published literature, summarizes moly's resistance to a number of corrosive media. It also lists the reference articles. For a copy of this paper, *circle #6.*

Molybdenum Improves Corrosion Resistance of Stainless Steels

Translated excerpts from two French articles discussing how moly improves the corrosion resistance of austenitic and austenitic-ferritic stainless steels are now available. *Circle #7.*

Special Steels Solve Hydrogen Sulphide Problem

Hydrogen sulphide in France's Lacq natural gas field brought up a metallurgical problem: the need for tubing meeting the N-80 strength requirements but with better resistance to sulphide stress corrosion than the conventional N-80 grade. Two such steels have been developed. One contains chromium, aluminum and molybdenum; the other contains chromium, molybdenum and vanadium.

For articles discussing both steels, send for "A Special N-80 Steel Tubing . . . " by Cauchois, Didier and Herzog, reprinted from *Corrosion*, and "Comments on new French N-80 Steels" published by Climax. *Circle #3.*

Vanadium in Low-Alloy, High-Temperature Steels

Molybdenum is a must in low-alloy, high-temperature steels. However, recent tests at the U.S. Naval Research Laboratory point up the role of Vanadium in such steels, and show the effect of variations in composition and treatment. Addition of Vanadium results in a better high-temperature alloy, but getting the improvement requires higher normalizing temperatures.

The advantages and limitations are described in an *Iron Age article*, "Higher Vanadium Improves Hot Strength of Low Alloy Steel," by Paul Shahinian and J. R. Lane. *For reprints, circle #4.*

New Cleaner Removes Surface Oxides From Moly Metal

A practical, low-temperature method of cleaning molybdenum has recently been developed. It is especially suitable for removing surface oxides prior to welding. The process involves two chemical baths: one at 150-180°F, the other at room temperature. *Digested from "Ryan Devises Molybdenum Cleaner," Ryan Aeronautical Company. For reprints, circle #5.*

Climax Molybdenum, Dept. 2
500 Fifth Avenue, New York 36, N. Y.

I'd like more information on:

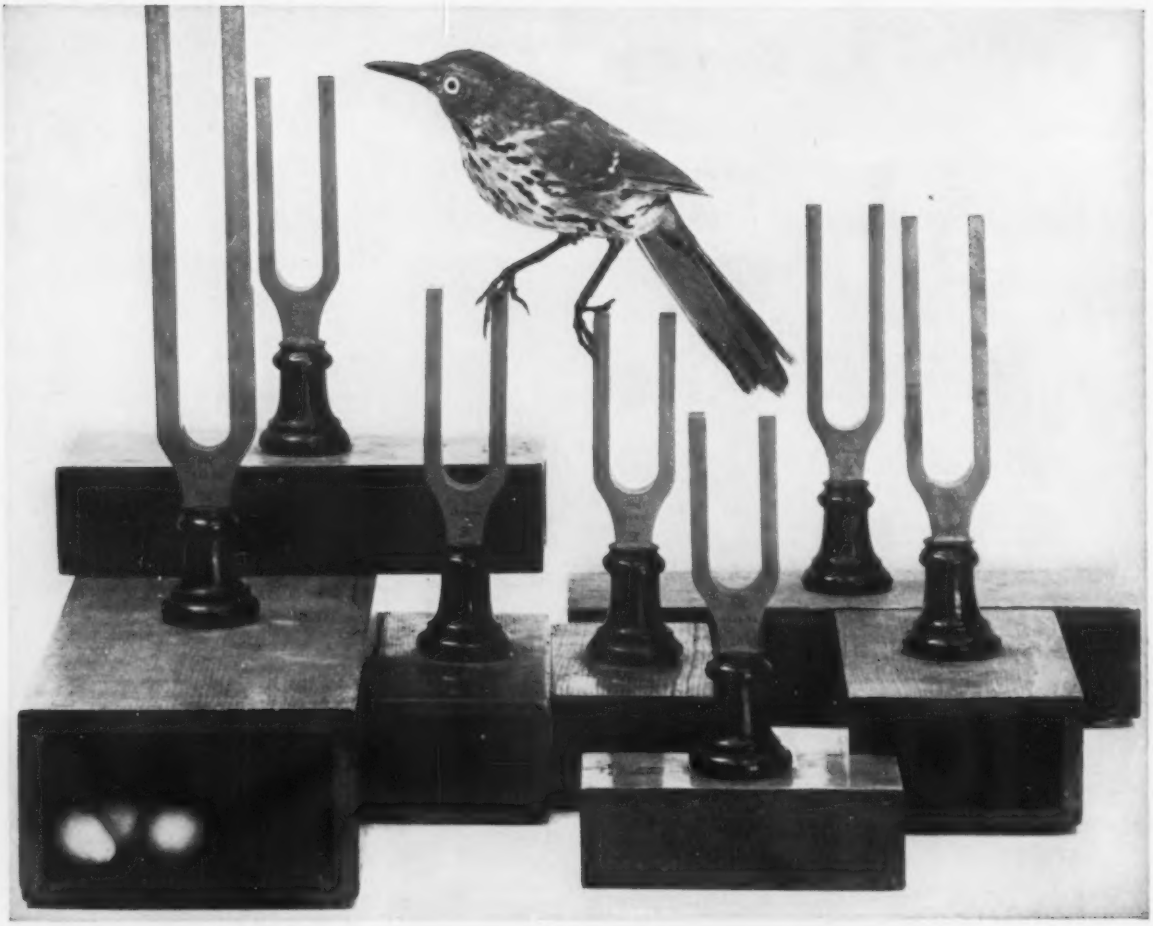
1 2 3 4 5 6 7

Name_____

Company_____

Address_____

City_____ State_____



The tender touch of evaluation

Once, the testing and evaluation of industrial materials and products was anything but birdlike. To see if something worked, you often had to tear it apart.

Today, industry employs the tender miracle of *non-destructive testing:* radiography.

When it comes to testing industrial materials, more and more people are specifying Ansco X-ray Films—first films ever tailored especially for the needs of industry.

THE RIGHT FILM
FOR EVERY X-RAY NEED:

SUPERAY "A"
Versatile: A "workhorse" film!

SUPERAY "B"
Resolving power for research!

SUPERAY "C"
High speed for production-line inspection!

THE RIGHT CHEMICALS FOR
PERFECT PROCESSING RESULTS:
Liquadol, Liquadol Replenisher, Liquafix!

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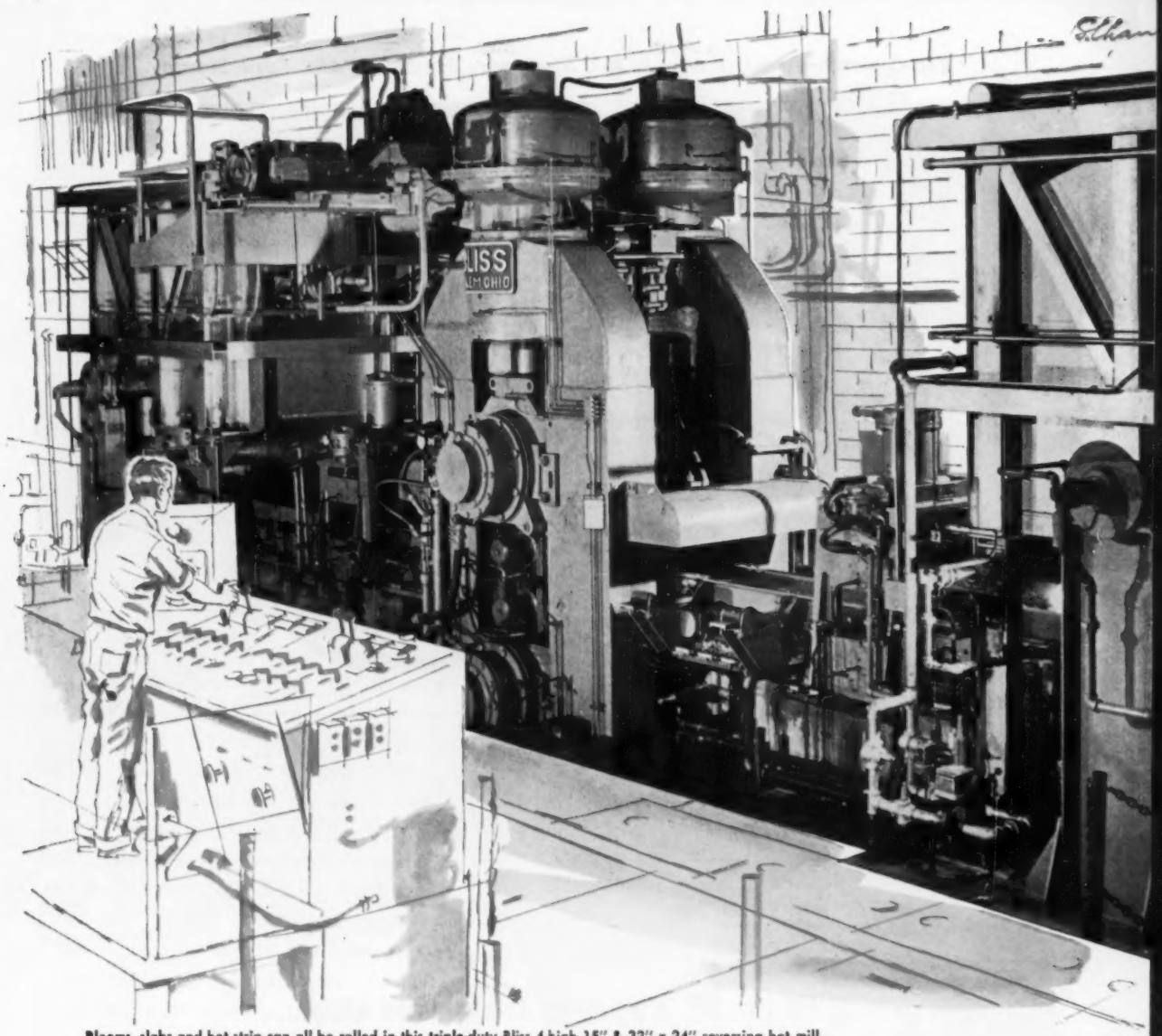
Ansco, A Division of General Aniline & Film Corporation, Binghamton, N. Y.

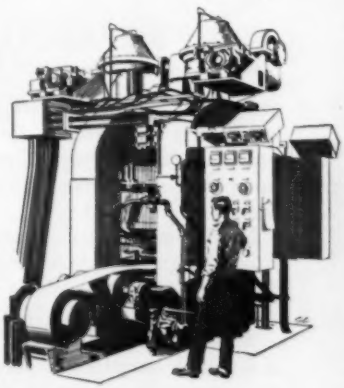


Blooms, slabs and hot strip can all be rolled in this triple-duty Bliss 4-high 15" & 32" x 24" reversing hot mill.

U-235 or magnetic alloys, it's all the same to these Bliss mills

Among the key installations with which the new Westinghouse Metals Plant at Blairsville, Pa., explores the unknown in metalworking are two unusual Bliss rolling mills. Blairsville's business is finding ways to cast, roll, forge and otherwise fabricate new and experimental metals. The materials rolled range from uranium alloys to magnetic materials so sensitive that the pressure of a finger will alter their electrical properties. The Bliss mills and handling equipment combine precision of control with the ability to stand extremely heavy rolling stresses. Large enough to provide limited production output, they can take an alloy from ingot down to 0.010" cold-rolled strip.

Whether your plans call for highly specialized mills like these or standard rolling and mill processing equipment, Bliss can help solve your problem. For more information, send for a free copy of our 60-page Rolling Mill Brochure, Catalog 40-A.



Hot rolled strip is further reduced to gages as thin as 0.010" in this Bliss 4-high 8" & 28" x 24" reversing cold mill.

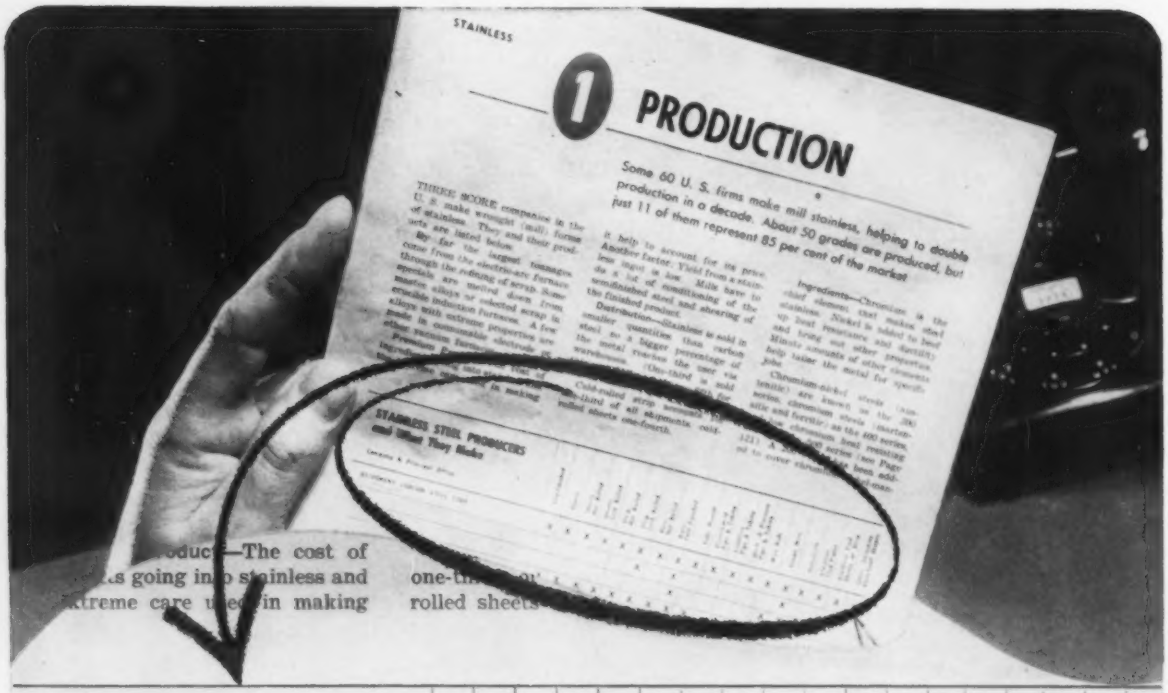
BLISS
SINCE 1857

100 years of making metal work for mankind

E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio

Experience**—the added alloy in **A-L Stainless, Electrical and Tool Steels


STAINLESS
1 PRODUCTION
Some 60 U. S. firms make mill stainless, helping to double production in a decade. About 50 grades are produced, but just 11 of them represent 85 per cent of the market
STAINLESS STEEL PRODUCERS and What They Make

STAINLESS STEEL PRODUCERS and What They Make Company & Principal Office	Semifinished	Plates	Sheets, Hot Rolled	Sheets, Cold Rolled	Strip, Hot Rolled	Strip, Cold Rolled	Bars, Hot Rolled	Bars, Cold Finished	Tube Rounds	Electricweld Pipe & Tubing	Seamless Pipe & Tubing	Mech. & Pressure Pipe & Tubing	Wire Rods	Drawn Wire	Extrusions	Stainless Clad Plates	Stainless Clad Sheets or Strip	Other, Including Structural Shapes
ALLEGHENY LUDLUM STEEL CORP. Pittsburgh	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
[illegible]						X		X						X				

Of the 60 producers of stainless steel...

only ALLEGHENY LUDLUM makes all sizes, shapes, finishes and analyses

In its November 4, 1957 issue, STEEL magazine published a complete run-down on the stainless steel industry. This article reveals that *only Allegheny Ludlum*, of the 60 some companies making stainless, produces all sizes, shapes, finishes and analyses.

This can save you considerable time and money. When you make Allegheny Ludlum your *one* source of stainless, you work with *one* sales engineer—*one* order, whether you buy sheet, strip, bars, tubing or whatever.

And, at the same time, you get the best technical service. A-L's crack research and development department is continually searching for new alloys, and better ways to use today's. Its findings are freely available to you through sales engineers, technicians and special literature.

Allegheny Ludlum follows the product from the melt through to finished form, has greater quality control over the stainless you buy. And since A-L makes all forms of stainless, you get unbiased recommendations as to what is best for your individual needs.

Profit by Allegheny Ludlum's status as the only one-source integrated supplier of all stainless forms. Call your A-L representative today . . . see how he can save you money and time. Or write ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.***

WBW 7121

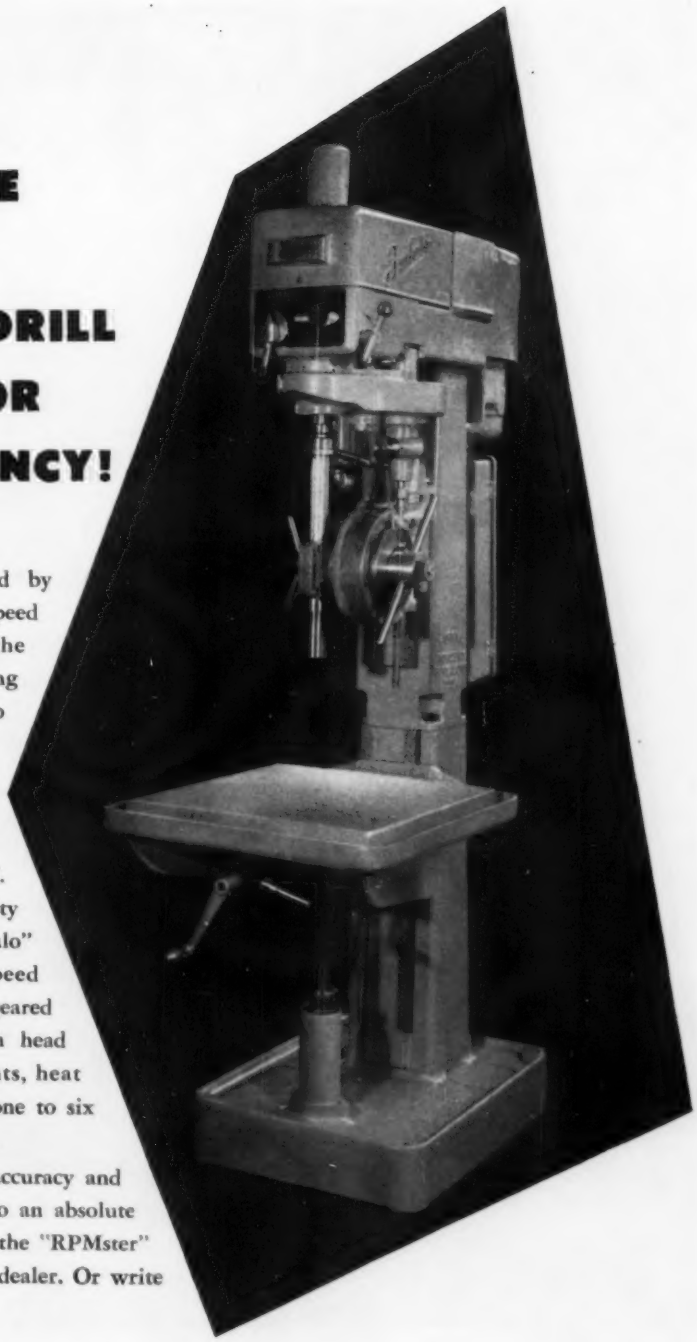
ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

Export distribution: AIRCO INTERNATIONAL

EVERY FORM OF STAINLESS . . . . EVERY HELP IN USING IT

EVERY FEATURE OF THIS VARIABLE SPEED DRILL IS DESIGNED FOR OPERATOR EFFICIENCY!



Painstakingly engineered and handcrafted by "Buffalo" to create the finest variable speed drilling machine that money can buy, the "RPMster" sets a new standard of drilling ease and smoothness that's certain to increase the efficiency and output of your operators. A touch of the easily-reached controls on the head gives the operator instant and infinite speed changes ranging from 100 to 3000 RPM. Contributing to the accuracy, dependability and trouble-free long life of the "Buffalo" "RPMster" are the gearless variable speed drive — precision spindle — reliable, all-geared power feed — hand-scraped ways on both head and table — finest alloy steel components, heat treated prior to machining. Available in one to six spindle models, with tapping attachments.

For a totally new experience in drilling accuracy and operational ease, with vibration reduced to an absolute minimum, arrange for a demonstration of the "RPMster" with your nearby "Buffalo" machine tool dealer. Or write direct for Bulletin 3967-A.

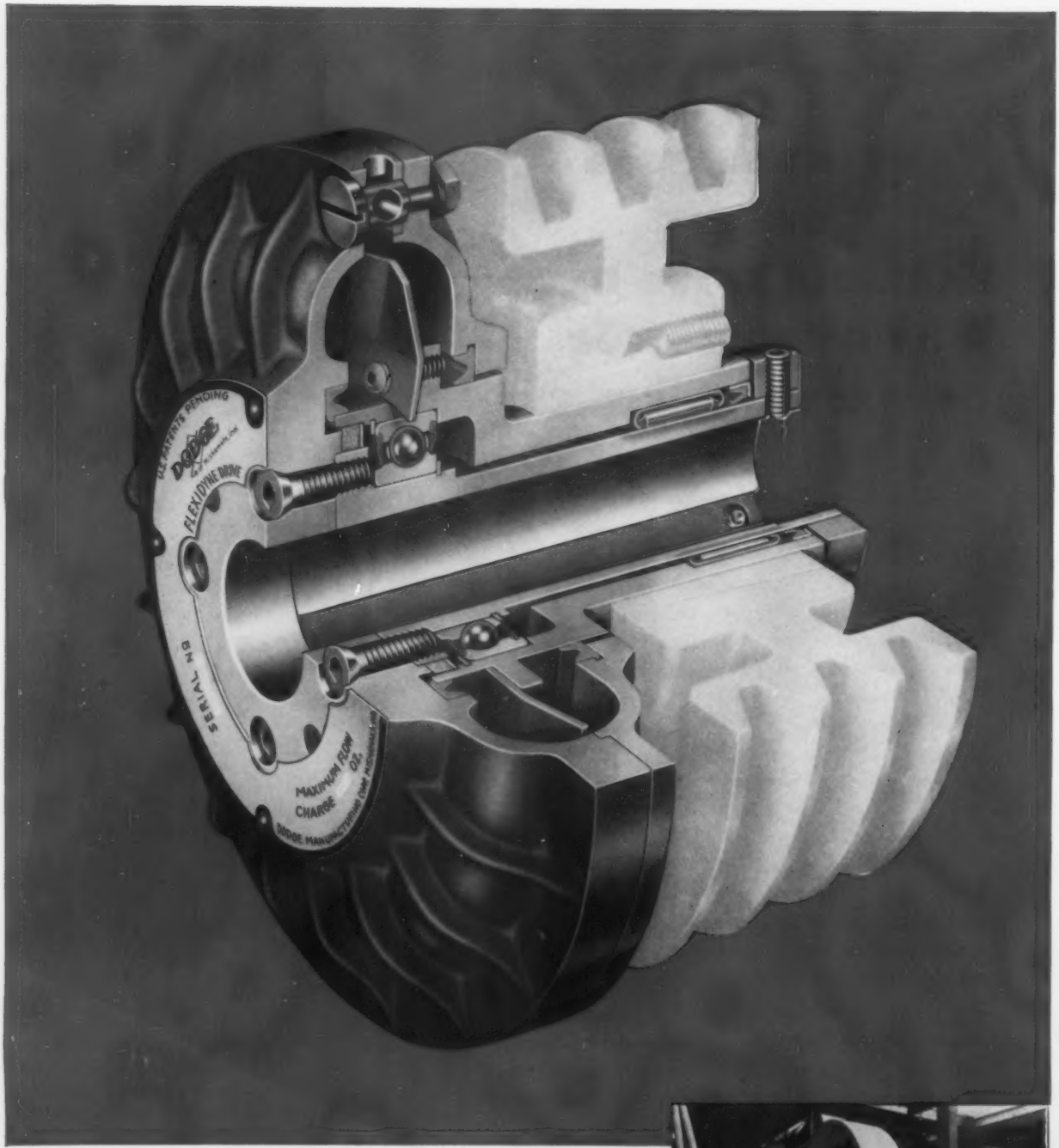
ESTABLISHED 1877 "Buffalo" MEMBER N.M.T.B.A.

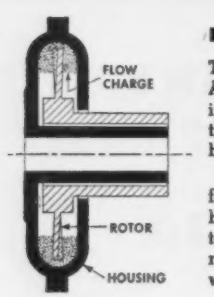
BUFFALO FORGE COMPANY

492 BROADWAY • BUFFALO, N.Y.

Canadian Blower & Forge Co. Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING BENDING





HOW FLEXIDYNE WORKS

The "dry fluid" in Flexidyne is tiny heat-treated steel shot. A measured amount, called the "flow charge," is contained in the housing, which is keyed to the motor shaft. Inside the housing is a rotor, free to revolve relative to the housing, but connected to the load.

When the motor is started, centrifugal force throws the flow charge to the perimeter of the housing, packing it between the housing and the rotor, which transmits power to the load. Initial slippage is momentary. Housing and rotor become locked together and achieve full load speed without slip and at 100% efficiency.

Overloads on a 150 hp jaw crusher cause sudden damage. Here Flexidyne is used to minimize this costly trouble. As a bonus, it reduces belt wear and replacement.

FLEXIDYNE

THE DRY FLUID DRIVE

OFFERS A NEW APPROACH TO DIFFICULT DRIVE PROBLEMS...OPENS THE WAY TO MULTIPLE SAVINGS!

IT IS NO LONGER NECESSARY to accept the destructiveness—the costliness — of conventional starting in the mechanical transmission of power! Flexidyne changes that.

LOOK AT YOUR DRIVES! Are you using expensive oversize or high torque motors merely to get your loads started? Are you using expensive starting equipment? Are you tolerating high demand rate? Are your belt maintenance costs high, because of the shock of across-the-line starting?

HOW ABOUT THE MATERIAL YOU PROCESS—wire, paper, textiles? Is your output hampered by breakages that you accept as "normal production"? Do you burn up clutches in getting your loads up to speed?

FLEXIDYNE—THE DRY-FLUID DRIVE—solves these problems—and many more! Flexidyne is revolutionary. *And so simple!* Off the shelf availability. Drives or Couplings. Fractional to 1000 hp. Ask your local Dodge Distributor or write us for technical Bulletin.

DODGE MANUFACTURING CORPORATION, 800 Union St., Mishawaka, Ind.

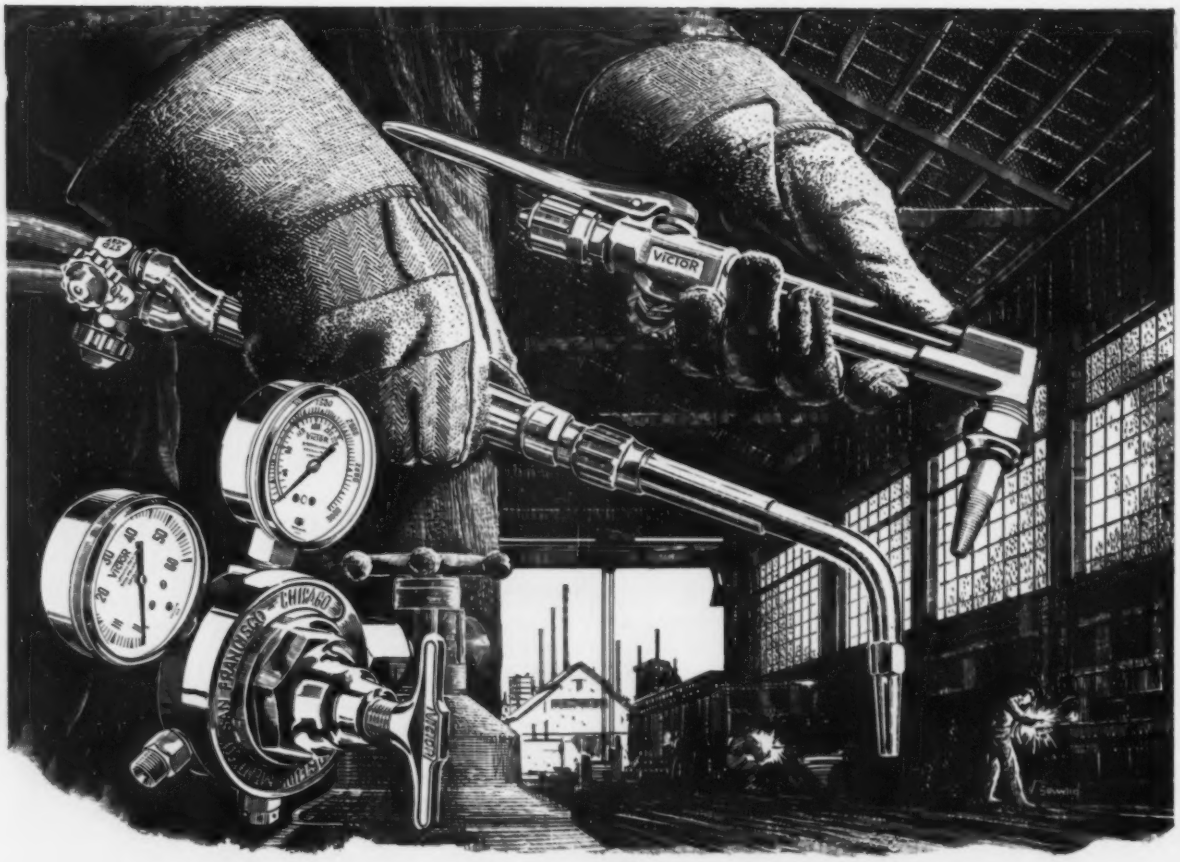
CALL THE TRANSMISSIONEER —your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

DODGE
of Mishawaka, Ind.

Flexidyne, accurately set for extra gentle starting, solves the problem of thread breakage on this textile beam warper—vastly multiplying productivity.

Smooth starting and deft spotting are required with this 20-ton crane. Flexidyne accomplishes both—and by so doing saved $4,000 in electric controls!

A ball mill drive is a tough one. Flexidyne not only eases heavy starting shocks here but eliminates the necessity *and the cost* of an oversize motor!



the most flexible tools in the metal working industry

VICTOR COMBINATION WELDING & CUTTING UNITS

FOR EASE OF HANDLING DIFFERENT JOBS . . . Welding, brazing, hardfacing, heating, heat treating, descaling and paint burning. Cutting, trimming, deseaming and weld scarfing.

WITH A WIDE VARIETY OF NOZZLES, TIPS AND CUTTING ATTACHMENTS, with quick-change, hand-tight, time tested sealing ring connections.

RELIABLE FIELD-PROVED REGULATOR DESIGN for safe, dependable pressure and flow control.

See for yourself how easy it is to handle your work when you use Victor equipment. Ask your Victor dealer for literature or a demonstration.

VICTOR for welding

36

VICTOR EQUIPMENT COMPANY

Mfrs. of welding & cutting equipment; hardfacing rods, blasting nozzles; cobalt & tungsten castings; straightline and shape cutting machines.

844 Folsom St., San Francisco 7 • 3821 Santa Fe Avenue, Los Angeles 58

For spring life everlasting...

NILCOR* ALLOY!

Nilcor alloy is not a steel! It is truly unique. It is believed to have no equal, for example, for continuous life in miniature springs. Further, it is non-magnetic and far outdistances steel or any known alloy in resistance to "set", fatigue and corrosion . . . even at high temperatures.

Major use to date is for non-breakable power springs in fine watches. But more and more Nilcor alloy is and will be furnished for the most critical requirements in instrumentation, control devices and equipment of many types . . . wherever extreme spring life and precise behavior are vital.

Perhaps National-Standard Nilcor alloy holds promise for some of your needs. We shall certainly be glad to cooperate *all* the way in helping you find out. Just check with our Athenia Steel Div., Clifton, New Jersey.

**Trade Mark National-Standard Co.*

NATIONAL NS NATIONAL-STANDARD **STANDARD**

DIVISIONS: NATIONAL-STANDARD, Niles, Mich.: *fine wire, stainless, music spring and plated wires* • WORCESTER WIRE WORKS, Worcester, Mass.: *music spring, stainless and plated wires, high and low carbon specialties* WAGNER LITHO MACHINERY, Secaucus, N. J.: *metal decorating equipment* • ATHENIA STEEL, Clifton, N. J.: *flat, high carbon spring steels* • REYNOLDS WIRE, Dixon, Ill.: *industrial wire cloth*

This "SCOTCH" Brand Tape keeps coiled-steel coiled!

A 12-inch strip of "Scotch" Brand Filament Tape holds tons of steel in a coil! That's economy for you—and more than that. "Scotch" Brand Filament Tape, unlike conventional strapping and banding materials, doesn't mar the metal surface, doesn't require special applicating equipment. And it can't cut workers' hands. Strips off clean—no disposal problems, either!

This is the "Scotch" Brand tape that's reinforced with thousands of continuous rayon or glass filaments—much as steel rods reinforce concrete. Tensile strength is up to 500 lbs. per inch of width—yet it has high shock-resistance—up to *5 times* that of other types of industrial tapes. 3M quality control assures the same results with every roll.

Next time you have a banding or strapping job, use "Scotch" Brand Filament Tape—and stick with it! Write Dept. DE-48 for complete information.

"Scotch" is a registered trademark of 3M Co., St. Paul 6, Minn.

When tape costs so little, why take less than . . .

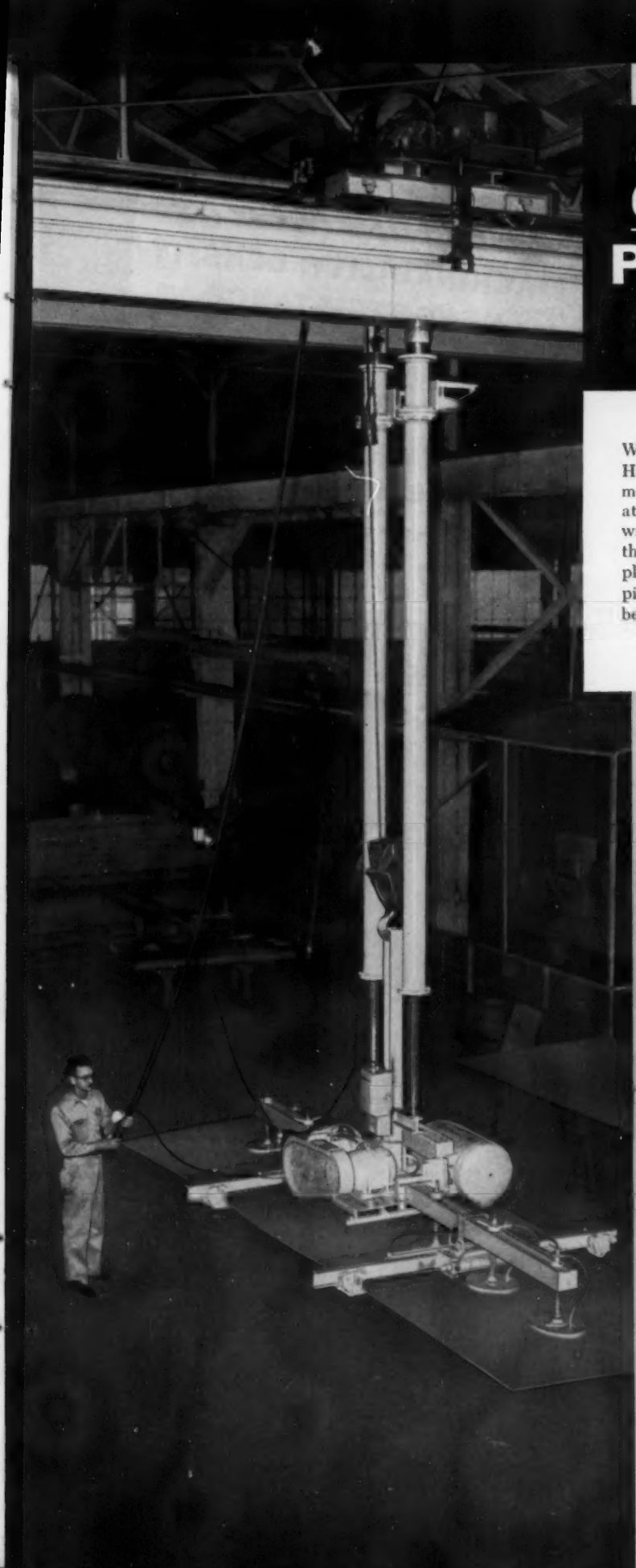
REG. U.S. PAT. OFF.

SCOTCH BRAND *Filament Tapes*

MINNESOTA MINING AND MANUFACTURING COMPANY

. . . WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY



NOW—

One-Man Plate Handling

WITH YOUR OWN CRANE!

With a NOBLE Pushbutton Plate Handler on your crane, there's no more need for prying up plate to attach slings or grabs... no more wrestling a swaying load through the shop... no more manhandling plate into place on feed tables or piles. One man does the job faster, better, with greater safety.

Here's why:

1. *Automatic* PICK-UP... *NOBLE vacuum lift system picks up sheet or plate on contact with surface; no blocking needed.*

2. *Automatic* MECHANICAL GRABS... *grip plate as soon as lifting begins, provide positive mechanical grip for safe carrying even if power fails.*

3. NO SWING & SWAY... *"stiff leg" crane attachment keeps load under control. One man can guide it safely through shop, spot it accurately on machine feed table or pile—faster!*

NOBLE Pushbutton Handlers are easily installed on cab or floor-operated overhead cranes. Permanent mounting saddle on crane trolley permits attachment or removal of entire handler assembly in 3 minutes, so there's no interference with normal crane use.

Standard lift capacities are 1000, 2000, 3000 and 4000 lbs., larger capacities available on order. Vacuum lift system will handle any type of ferrous or non-ferrous metals or plastics, won't mar finishes or coatings.

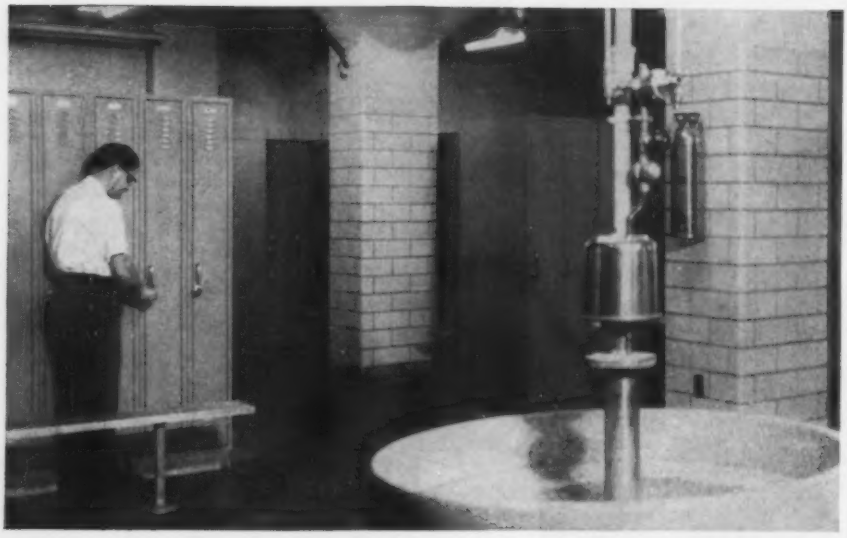
Every working hour, every working day, "muscle power" handling methods are eating up profits, slowing production. Want proof?—Check your own shop *now*. Then get the facts on NOBLE Pushbutton handlers—write or wire for complete data. Please address Dept. I-4.

NOBLE also manufactures complete automatic plate handling systems; brochure on request.

NOBLE COMPANY

P. O. BOX 1979 • OAKLAND 4, CALIFORNIA

U. S. and Foreign Patents Pending



ON-THE-JOB PROTECTION for employee valuables and personal belongings is being provided by Republic Steel Lockers in industrial plants everywhere. They combine smart styling and design with simple construction for fast, easy installation. Republic Steel Lockers provide full inside-locker roominess, sanitation, safety. Bonderized finish is locked on . . . rust is locked out. Republic's Berger Division offers complete planning and installation service. Send coupon for full facts.

Versatile Chateaugay Pig Iron is specified for both castings shown at left. The producer, The Union Metal Manufacturing Company, Canton, Ohio, has found over the years that there is no better nor more economical means for producing consistently top-quality castings or for meeting their customers' strict requirements.

The flywheel is cast in sizes up to 36 inches in diameter. It is used in both stationary and automotive engines. Casting requirements call for a high degree of machinability since one surface serves as a clutch face, plus excellent density to resist the effects of turning at a very high rpm.

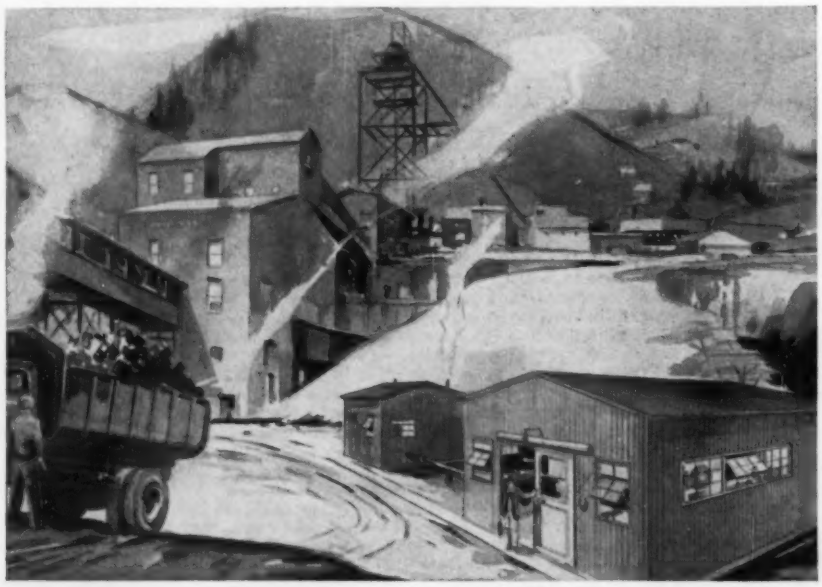
The melting pot, used by a large appliance manufacturer in melting aluminum, requires high heat-resistance and maximum density.

Chateaugay's uniform distribution of chemical elements produces a dense grain structure which results in economical machining—plus excellent wear-resistance. Other characteristics of Chateaugay are unequalled by any domestic pig iron, and its high carbon and unusually low sulphur, phosphorus, and manganese contents make it ideally suited for production of ductile cast iron.

A Republic Pig Iron Metallurgist will give you all the facts about Chateaugay and other Republic Irons. As the only producer of both Northern and Southern Iron, Republic offers industry's only complete line of all grades of merchant pig irons. Northern grades include Malleable, Bessemer, Foundry and Basic. Southern furnaces produce Foundry and Basic Irons.

The coupon will bring you prompt, expert metallurgical service and more information on Republic's complete line of irons.

ADDITIONAL SPACE REQUIREMENTS are met economically with Truscon's new line of "Budget Buildings". They are strong, lightweight, flexible — can be erected quickly at foundry, mill, factory, and field locations. No painting needed. Widths, 32 to 48 feet (in 4′ 0″ increments) . . . heights, 12 and 14 feet . . . lengths as long as you want them. Send coupon today for complete facts.



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World's Widest Range of Standard Steels and Steel Products

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1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

☐ Have a Pig Iron Metallurgist call.

Send more information on:
☐ Chateaugay ☐ Northern Pig Irons ☐ Lockers
☐ Truscon "Budget Buildings ☐ Southern Pig Irons

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

How DoALL's "Continuous SERVICE" insures profitable operation with DoAll Machine Tools

7-point program of interest to all plant executives

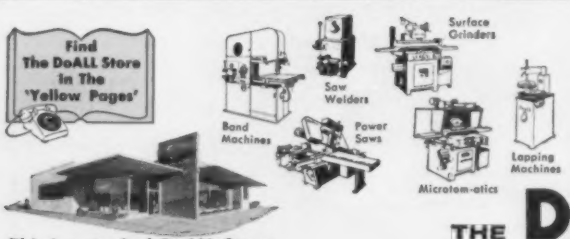
To keep your DoALL machines producing at the highest possible profit, The DoALL Company offers a 7-point User-Help Program—far beyond any other service in the industry.

1. **FREE INSTALLATION SERVICE** to assure correct setup and full protection during initial operation.
2. **FREE OPERATOR TRAINING** certifies every operator you assign. In addition to personal instruction, special help includes "tip-sheets," wall charts and handbooks on latest techniques.
3. **FREE MACHINING ANALYSIS** is our specialty to keep your DoALL machines at full efficiency as new materials, new jobs and special requirements develop in your production.
4. **FREE MACHINE FIXTURING** helps to obtain peak performance in production of duplicate parts. Service includes sketches, recommending fixtures proved on similar jobs. Saves your time and money . . . prevents costly, needless experiments.
5. **FREE JOB-SPOTTING** within your plant keeps your DoALL machines busy. We can evaluate many jobs you may have overlooked—jobs your DoALL machines can do at lower cost.
6. **FREE MACHINE INSPECTION** — periodic inspection includes minor adjustments and reporting signs of wear—with timely tips to correct these conditions. Written Certificate of Inspection is furnished.
7. **DoALL PACKAGE SERVICE** provides a uniform, high-quality service at lowest possible costs from basic overhaul to production maintenance and modernization. Safeguards your DoALL machine investment . . . assures continuous profitable returns.

These exclusive services are administered by over 200 factory-trained engineers, one of whom is located *near* your plant.

CALL TODAY FOR FREE MACHINE CHECKUP

Ask your nearby DoALL store to give your DoALL machines a complete inspection and operation test—free of charge!

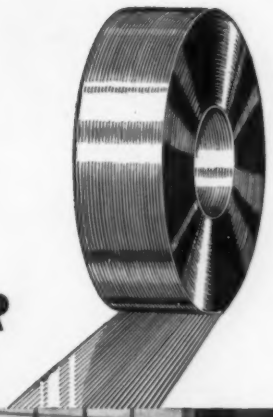


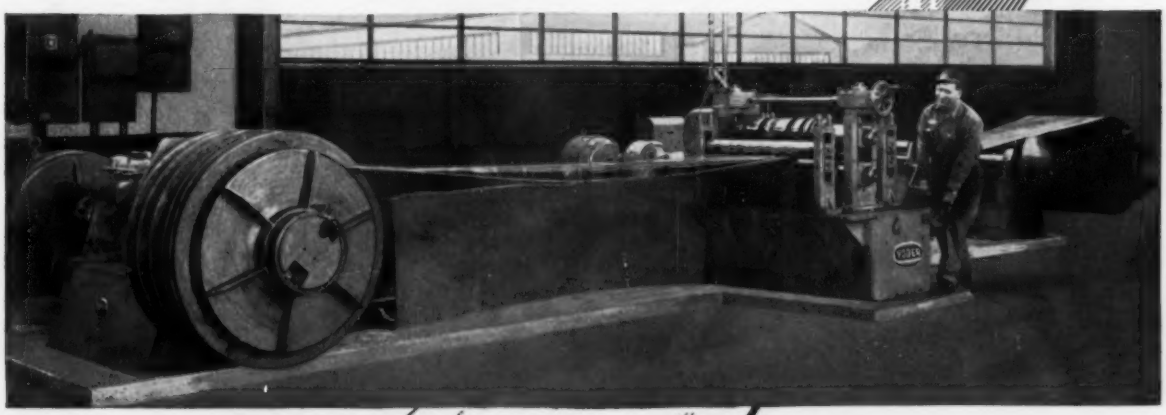
This is a typical DoALL Store

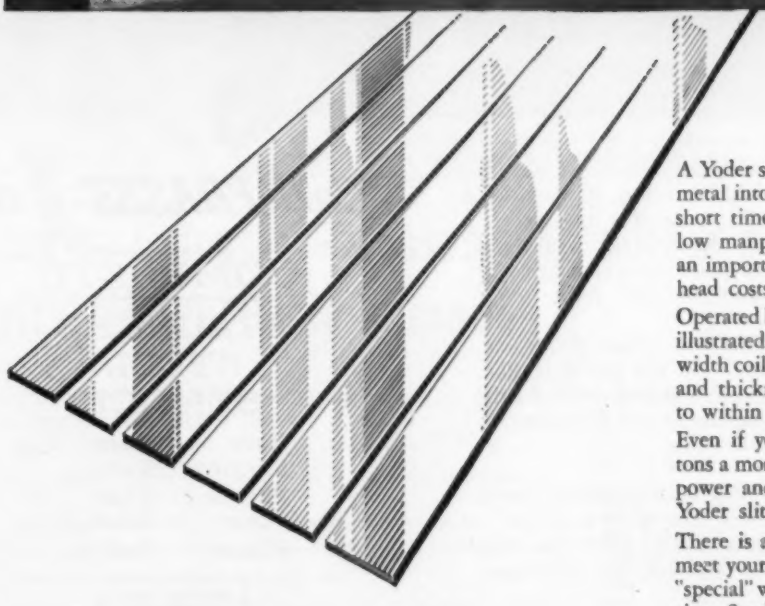
THE DoALL COMPANY, Des Plaines, Illinois

S-1

from cold strip to slit strands
IN SECONDS...
with a YODER
ROTARY MULTIPLE SLITTER







A Yoder slitter converts mill-width coils of flat-rolled metal into many variable-width strands in amazingly short time. Speed, coupled with great accuracy and low manpower requirements, makes a Yoder slitter an important factor in keeping production and overhead costs down.

Operated by only two men, the Yoder Type 3-48 slitter illustrated is designed to accommodate standard mill-width coils up to 48 inches wide, in a variety of metals and thicknesses. The slit strand widths can be held to within a .004" tolerance.

Even if your steel requirements are as little as 100 tons a month, the savings to be realized in time, manpower and raw material costs alone will pay for a Yoder slitter in the first few months of operation.

There is a Yoder slitter designed and engineered to meet your requirements, and to speed the delivery of "special" width stock in a wide range of large or small sizes. Send for your free copy of the fully-illustrated, 76-page booklet, "Multiple Rotary Slitting Lines."

THE YODER COMPANY
5510 Walworth Avenue • Cleveland 2, Ohio

ENGINEERING
YODER
MANUFACTURING

ROTARY SLITTING LINES
PIPE AND TUBE MILLS (ferrous or non-ferrous)
COLD ROLL FORMING MACHINES

the beverage bar with a "brain"... of Stainless Steel

The "brain" in this coin-operated soda dispenser is a valve that works round the clock to see that you get soda . . . or your money back.

It's an ingenious unit that automatically shuts off if the system fails — or the tank is emptied. Then too, it provides a device that bleeds air after each refill . . . and a precise mechanism that equalizes pressure to assure a uniform drink. Sanitary and corrosion-proof, all its working parts are made of stainless steels — not just one steel, but *four*.

The plunger and stop are Type 430F bar (magnetic) . . . the spring is 302 wire (non-magnetic) . . . the probe is 303 bar (machinability) . . . and the cylinder is 304 *welded* tube (economy). Despite this mixed requirement, *all* 4 grades are supplied *overnight* by Frasse.

You'll find it simpler, when working with stainless steels, to work from Frasse warehouse stocks. The wide range of sizes, shapes and analyses, so quickly available from this single source, is a time and effort saving convenience. For stainless steels . . . *always* call Frasse *first*.

Call FRASSE 1st for

COMPLETE STAINLESS STEEL SERVICE

Bars	**Wire**
Forgings	**Tubing**
Sheets	**Pipe**
Strip	**Fittings**
Plates	**Valves**

AMERICAN STEEL WAREHOUSE ASS'N.
YOUR STEEL SERVICE CENTER

Peter A. Frasse & Co., Inc.

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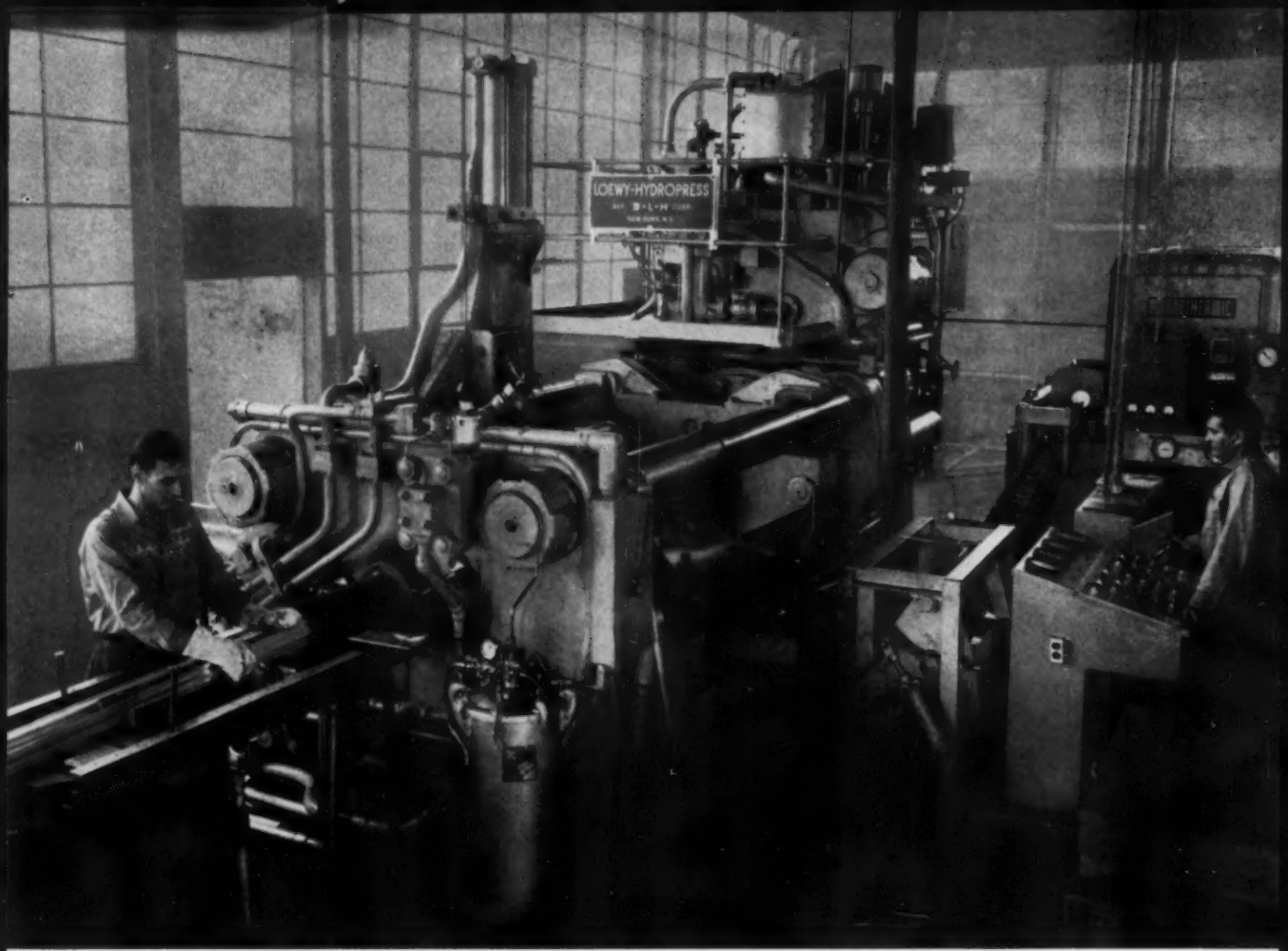


In operation at Alan-Scott Aluminum Corp., Division of Seasonmaster, Inc., Westbury, N.Y., this oil-hydraulic self-contained 1250-ton-capacity aluminum extrusion press with inverted tie rod arrangement was designed and built by Loewy-Hydropress.

Loewy Extrusion Presses incorporate every feature vital to profitable operation

Extrusion press operators know that profit margin depends on these important design features:

- Short dead cycle time
- Accessibility; speed with which press can be loaded and tooling changes made
- Independent pressure supply to all auxiliary movements
- Extra-high extrusion speed on lower tonnage shapes
- Positive container sealing and alignment

Now let's look at what the unique Loewy design offers. New Loewy oil-hydraulic extrusion presses have the shortest dead cycle time of all light metal presses of similar capacity. Long stroke assures fast and easy billet loading. Containers, sturdily built for increased life, allow the use of full-length billets even for bridge dies, for which, incidentally, a separate automatic cycle is provided. Quick tool change permits rapid switch from shape to shape. A unique inverted tie rod arrangement assures more space for unobstructed working inside the press.

And on Loewy Extrusion Presses, an exclusive system makes for fast and easy container change. All auxiliary movements, such as container shifting, billet loading and shearing, are actuated by independent oil pressure supply for maximum speed of main ram. High-tonnage cylinders are provided for container shifting and stripping and for the main and auxiliary shears. A separate pump maintains absolute container sealing force. A faster extrusion speed alternative is provided for easily extruded large shapes.

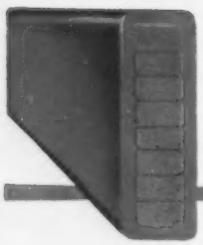
Internally piped and wired, then hydrostatically tested on our erection floor before shipment to you, Loewy-Hydropress Extrusion Presses are your assurance of maximum output of top quality parts at minimum labor and maintenance costs. Write us, Dept. A-4, for detailed information.

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

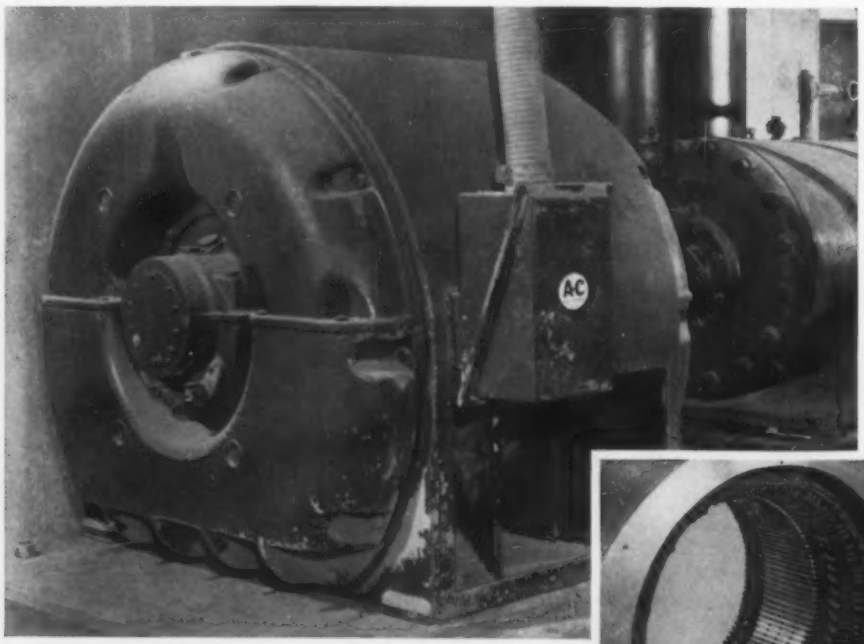
111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering

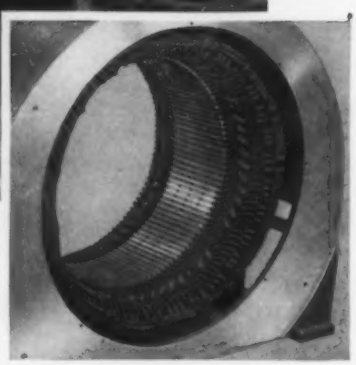
BALDWIN BLH LIMA-HAMILTON



Super-Seal...

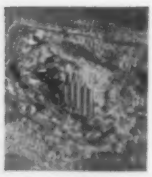
motor with void-free insulation





The motor that dust and dirt can't hurt

Silco-Flex Insulation



Polyester Mica Tape

Asphaltum Mica Tape

Note difference in abrasion!
Insulation shown after sandblasting for one minute with 90-grit aluminum oxide and 100-psi air from distance of six inches.

REDUCE motor clean-up frequency and schedule this downtime at your convenience by using *Super-Seal* motors in areas where there's abrasive dust and clogging dirt. These motors —

Resist abrasion: Rubbery *Silco-Flex* insulation used in *Super-Seal* motors resists the cutting action of abrasive dust particles. Unlike conventional insulations, *Silco-Flex* insulation is flexible and resilient.

Completely sealed: *Super-Seal* motor insulation is sealed against contaminants. The vulcanized void-free dielectric barrier of *Silco-Flex* insulated stator coils even resists penetration by carbon black particles.

Combined with void-free *Silco-Flex* insulation are integrated mechanical features that make this motor especially suited to your toughest applications.

Get details! Call your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

Super-Seal and Silco-Flex are Allis-Chalmers trademarks.

ALLIS-CHALMERS

A-5702

Thrives on Rejects

Salvaging rejects is the business of a firm that tackles correction of defective parts through engineering analysis. With major manufacturers limiting inventories to create more productive space, defective shipments can jeopardize production schedules. Here's where the inspection firm steps in to serve both supplier and manufacturer.

Research By-Product

The goal of formulating materials to design needs will get a big boost with the coming announcement by a major auto company of a new low-cost alloy for high-temperature use. It's a by-product of research in solid-state physics. Translation of lab developments into production processes could give us synthesized metals in 10 to 20 years.

Plastic Nails

Researchers have come up with a plastic so tough you can use it for nails. In fact a lumber company is using them on logs where the nails will neither damage nor dull saw blades. Even though it is a thermoplastic, the material has unusual impact strength, dimensional stability, and heat resistance.

Extrude Rubber on Metal

For both rigid and non-rigid metal forms, a new process applies a continuous, watertight extruded rubber film up to ⅛-in. thick. Developed to produce insulated high-voltage bus bars, the process has many other applications where atmospheric or moisture seals can be incorporated into structural members.

Suspended Carburization

The problem of shutting down heat-treat furnaces for brief periods during the current business slowdown, yet avoiding furnace deterioration, is producing some effective solutions. A number of firms working two shifts per day are holding the work in the furnace at reduced temperatures during the shutdown shift. In one or two cases, the charged furnaces have been held for 48 hours at suspended carburization without damage to the load.

Pigment for Metal Finish

To meet a growing demand for protection against rust on exterior steel surfaces, a new pigment consists of a silica core on the surface of which basic lead chromate has been fused. It has the proven rust-inhibitive properties of lead and chromium compounds and the non-chalking of fused lead chromate. Tinting is easy, permitting production in a variety of colors.

Improved Quench

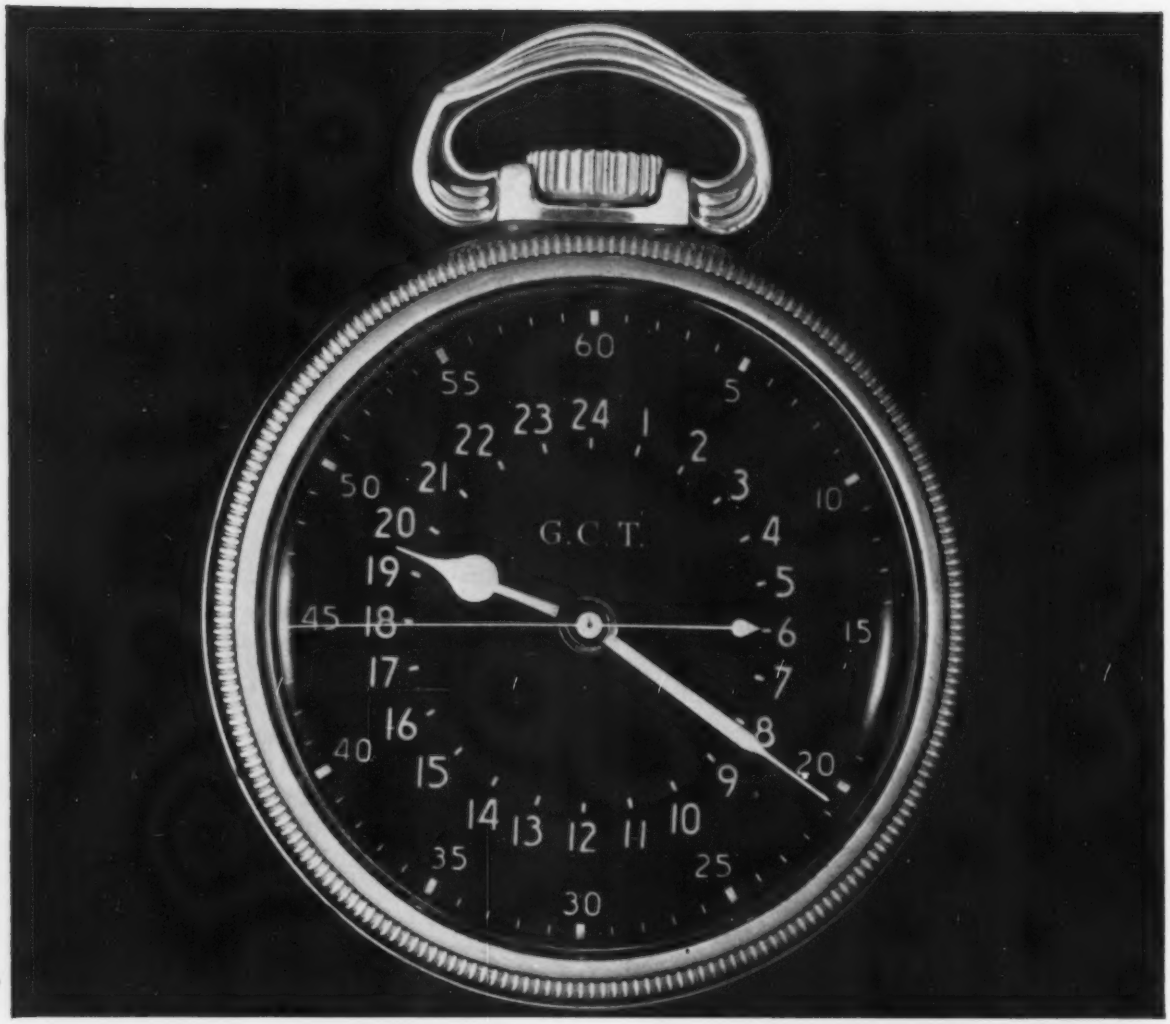
Headed for the heat treating market, a new quench is based on water plus a 20-pct polyvinyl alcohol mixture. The aim is to solve the problem of "soft spots" that are sometimes associated with a straight water quench.

Engine for Small Autos

A government contract to an automaker may prove the breakthrough for the first U. S.-built lightweight car. The $5.5 million contract is for 250 ¼-ton utility vehicles to be powered by an aluminum diecast V-4 air-cooled engine. The contract will give the company money to tool for manufacture of the engine for its small line of cars.

Computer Aids Profiling

A new flame-cutting unit follows instructions from a magnetic tape. Prepared by a computer, the tape eliminates many of the conventional stages between the drawing board and the cutting machine, including use of templates. You don't have to own the computer either. A centralized computer service provides purchase time as required.



Once around--and we'll have shipped your warehouse order for Timken® 52100 Tubing

THE hour hand on that watch goes around once in twenty-four hours. And before it gets completely around, we can ship your less-than-mill quantity order of Timken® 52100 tubing. We can save you time because we carry 101 sizes of 52100 tubing in our mill warehouse.

And you'll save money, too, with Timken 52100 tubing—by substituting it for costlier alloy steels. You get a steel that's through-hardened in moderate sections, that can be hardened to file hardness or tempered back as you desire.

Many thousands of tons of Timken 52100 have been made into aircraft parts, ball bearing races, pump parts and plungers, collets, bushings, spindles, grinding machine parts and precision instruments.

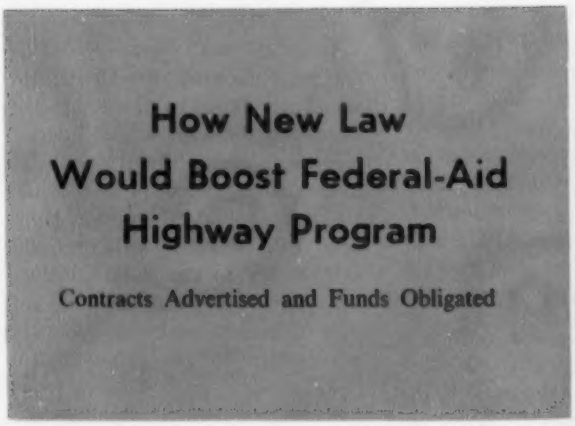
You can rely on Timken 52100 steel. Our rigid quality control assures you uniformity from tube to tube, heat to heat, order to order. We pioneered 52100 tubing in America, and we're the only company that makes 52100 steel in all three products—tubing, bars and wire.

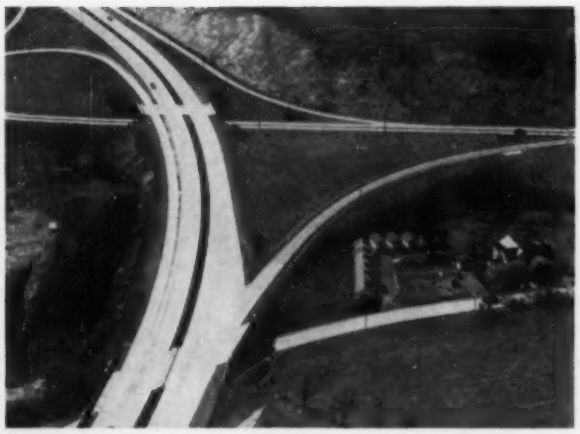
Give us 24 hours and we'll have your Timken 52100 tubing on its way to you. It's available in O.D.'s from 1″ to 10½″ and a wide variety of wall thicknesses. Write, phone or wire: The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO".

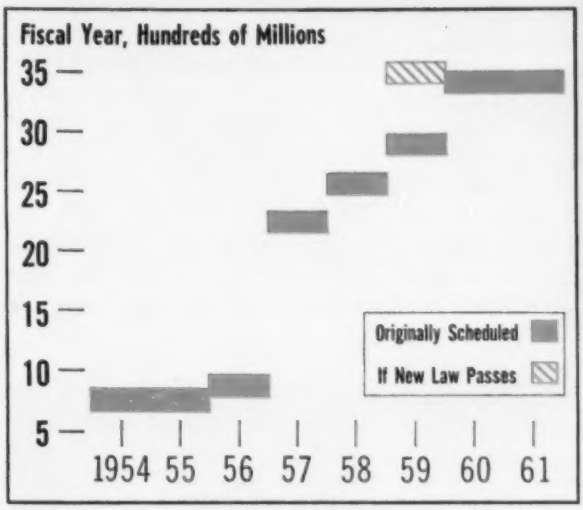
TIMKEN *Fine Alloy* **STEEL**

TRADE-MARK REG. U.S. PAT. OFF.

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING







What Roadbuilding Speedup Means to Business

Congress, by providing more in federal aid, has given the green light to the highway program.

Success of the booster plan, including its emergency anti-recession provisions, depends on how fast the states can move to match federal grants.

▪ Prodded by the recession, Congress has beefed up the roadbuilding program.

But how soon its effect will be felt by the economy and how much it will aid material suppliers, construction equipment makers, and contractors depends on the states.

Almost all the new federal money must be matched in some degree by funds from the states. This applies even on the $400 million released by Washington in an emergency one-year construction program on the ABC roads (primary, secondary, and urban routes).

How quickly the states move to put up their share of the costs and get work under contract will determine whether the plans will have

much impact during this year.

Some Gains for Steel—Even if the states make maximum use of the new federal grants the gains in raw material sales will not be large. Steel needs for highway use, the Bureau of Public Roads estimates, should increase by 300,000 tons over last year. Under the speedup, about 2.6 millions tons of steel will be required as against the 2.3 million tons consumed in 1957.

Most of this 12 pct boost will go for structural steel (wide flange and standard shapes, wide and standard plates, bearing and sheet piles) and for reinforcing bar, rod, and wire. Culvert pipe and other steel products are less affected.

Structural Steel Breakdown—For every one million dollars of contract construction costs, the Bureau points out, these tonnages of steel are used: structurals—260; reinforcing bar and rod—201; culvert pipe—32; and miscellaneous products—22.

The new plan should create 88,000 jobs this year with the number increasing to about 520,000 when the program is in full swing.

What are the states doing to get the program rolling? State governors have already testified before Congress that extra money can be put into contracts within 60 to 90 days after the law goes into effect. This planning for the ABC roads is much farther along than that for the interstate highway system.

Plans Are Prepared — Roadbuilders are optimistic about what can be done during the rest of 1958. They admit the greatest impact of the program will come during 1959. But they also believe some contracting will take place this year. State highway departments have told the American Road Builders Assn. that many ABC projects planned and ready to go can be put under contract in a couple of months.

The $400 million emergency fund will be available only for projects contracted for before December, 1958 and scheduled for completion by December, 1959. Any unused funds will lapse.

How It Will Work—Here are the mechanics of transferring the emergency funds to the states: The Bureau of Public Roads will decide how much of the federal grant each state will get, based on its previous allotments of ABC funds. However, BPR will not turn over any new money to the states. Instead the states will pay all the bills and then claim reimbursement from the government for its share of the costs.

New federal funds, totaling $7.7 billion, will be made available to the states under the terms of the Federal-Aid Highway Act of 1958. When funds already earmarked for the program are added and matched by the states a total of $10.3 billion will be ready for roadbuilding use in 1959, 1960, and 1961.

Where It Will Go—This is where the money will be spent, the road systems involved, and what the

Some Help for Steel In Highway Program

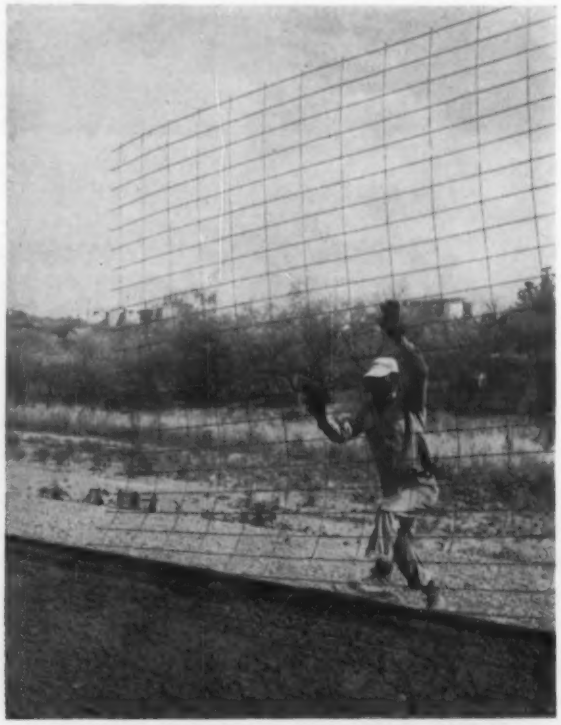
Steel Consumption for Highways*

Major Product	Tons, 1957	Tons, 1958
Structurals	1,198,600	1,344,200
Reinforcing	926,610	1,039,170
Culvert Pipe	147,520	165,440
Miscellaneous Pipe	101,420	113,740

How Principal Products Break Down:

Structurals	Pct		Pct
Wide Flange Shapes	46	Standard Shapes	21
Bearing Piles	10	Wide Plates	6
Standard Plates	14	Sheet Piles	3
Reinforcing			
Bar	80	Wire	20

* Bureau of Public Roads Estimates.



HIGHWAY STEEL: More roadbuilding will help sale of welded wire fabric and other steel products.

MORE ACTIVITY DUE: New act will aid urban highway work like this bridge on Chicago's Calumet Skyway.

states must do in matching funds:

Interstate Highway Program—A connected national network of 41,000 miles of controlled-access superhighways. The new measure adds $200 million to existing federal funds in fiscal 1959. The money is immediately available to the states. In addition, 1960 funds, ready this July, are increased by $300 million. Funds for 1961 will also be boosted by $300 million.

Total federal share for the three years will advance to $7.2 billion. Including money already authorized for the interstate system the new government spending schedules are: 1959 — $2.2 billion; 1960 — $2.5 billion; and 1961—$2.5 billion.

For every $900 put up by the federal government the states must provide $100. Additional federal spending of $800 million in the years 1959-61 under the new act means state contributions of $89 million.

Regular ABC Program—Involving a total mileage of 680,000 miles of primary routes, secondary or farm to market roads, and the extension of both into urban areas. Federal authorization for fiscal 1960 has been increased from $875 million to $900 million. Money will be available to the states this July. Another $925 million will be made ready the following July for fiscal 1961.

States match these federal funds on a 50-50 basis. For maximum use of the government allocation of $1.825 billion in 1960 and 1961 the states must raise the same amount.

Emergency ABC Program — In addition to the regular ABC grants, Congress has provided an emergency fund for $400 million, also immediately available. Aimed to encourage quick construction and employment on ABC projects it must be used before December 1959. This aid is granted the states on a 66⅔ pct federal and 33⅓ pct state matching basis.

However, the states may borrow, from a fund of $115 million just established, up to two-thirds of their contribution. This money would be repaid the federal government from regular state ABC funds in 1961 and 1962.

Public Domain Roads—Spending for these roads (located in forests, parks, and public lands and almostly completely financed by the government) will also be increased in 1959-61. During fiscal 1959 $11 million has been added to previously scheduled funds.

Total will be $114 million, with the level dropping to $112 million for 1960 and 1961.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th St., Philadelphia 39, Pa.

VALFORGING: Special forging is cheaper than welded, two-piece part

Making the Most Of Know-How

▪ Two years ago Thompson Products Co., Cleveland, was too busy pushing out auto and jet engine valves to think about diversifying. Though they had made over one billion auto valves their hot extrusion-forging background was rarely applied to other products.

One day a pump manufacturer asked engineering assistance to turn out a one-piece forged pump gear-and-shaft to replace the two-piece part then being used. The Thompson version turned out to be stronger and cost 20 pct less. Max Tauschek, chief engineer Valve Div., and sales manager Don Martin saw this as an opportunity to diversify. The result is "Valforgings."

Aim—A major goal is attracting low-carbon steel partsmakers into high alloy without the usual machining problems.

Early applications, in addition to the pump part, have been a special rod for an atomic reactor, special gear blanks and a plunger and pistons. Another type being developed is fasteners for missile applications to hold at 1500°F.

Advantages—A major advantage is grain flow continuous and symmetrical with the outside contour. This means a 10 to 30 pct gain in fatigue strength compared to machining from bar stock. Forging to near-finished size rather than working larger rough forgings cuts machining time and scrap loss.

Size limitations are about the same as for valves, about 5 in. diam, and 12 in. shaft length.

Campbell Speaks On Business Outlook

The idea that salespeople should be shielded from the bad business news was decried by Tom Campbell, editor-in-chief, the IRON AGE, in a luncheon talk to members and guests of the Sales Executives Club of New York this week.

"There is an idea being fostered by some these days that salesmen and their managers should stick their heads in the sand and read no bad news, see no bad news and talk no bad news," Mr. Campbell said.

Time For Hard Selling — The IRON AGE editor stated flatly that "of course we are in a recession" but by knowing the real facts all salesmen worth their salt can use these facts to prod for more sales, change poor selling habits and get experience of future value.

Claiming that there is a lot of difference between an optimist and a Pollyanna, Mr. Campbell said, "to think that business men, especially salesmen, should not get all the news—good and bad—is to be emotionally immature and basically incapable of doing the best selling job possible."

Hysteria Uncalled For—Turning to the recession Mr. Campbell said that most of it is concentrated in the heavy industry sector of the economy. "Right now it is as bad as 1954 and may become worse than the slide of 1949 but it is still far from a depression and won't support more than 10 pct of the current hysteria, the politicking and the running around with a "look Mom, no head posture."

Mr. Campbell predicted that the current ragged, jagged bottom of the metalworking recession which we are now in will last for several months to be followed by a slow upward trend. He cautioned, however, that there may be some "misstarts," some more bottoms, some slight uptrends and some puzzling movements before the so-called "real" upturn makes its appearance.

Recession Hits the Ore Pits

Surpluses Pile Up at Great Lakes Ports

Iron ore prices have leveled off after three successive years of increases.

Even excess taconite is being offered for sale for the first time.—By T. M. Rohan.

▪ Steel mills are up to their ears in iron ore this year.

Boats ran heavy last season hauling 84.6 million tons on the Great Lakes in anticipation of a fourth quarter upturn that didn't materialize. Now there are 7.4 million more tons piled up at lower Great Lakes ports than at this time last year. Nationally there are 13 million more tons.

Prospects this year are for 58 or 60 million tons being shipped in the Lake Superior district which would be the slowest year since 1954 with 60.7 million tons.

Prices Unchanged — An early inkling of this year's market came when producers announced no price increase in 1958. This was the first time prices held the line since 1954.

Last week 1½ million tons of excess taconite were offered for sale on the open market for the first time. Taconite so far has been almost exclusively captive tonnage of steel companies participating in the projects.

Imports Compete—The foreign ore impact also continues to grow. All foreign ores last year hit about 33.7 million tons—10 pct over 1956 and 42 pct over 1955. Last year's volume of immigrant ores was equal to 41 pct of the total waterborne tonnage from U. S. mines in the Lake Superior district. And 1957 was the first year any foreign country except Canada exported more than 10 million tons. Venezuela did the trick at 12.2 million tons, only a shade behind Canada at 12.6 million.

Leading lake carriers don't expect to have ore boats out on the lakes until mid-May and then only at about 70 pct of fleet strength. There could be a rush at the end of the season to beat the ice if steel production surges but warning would be ample.

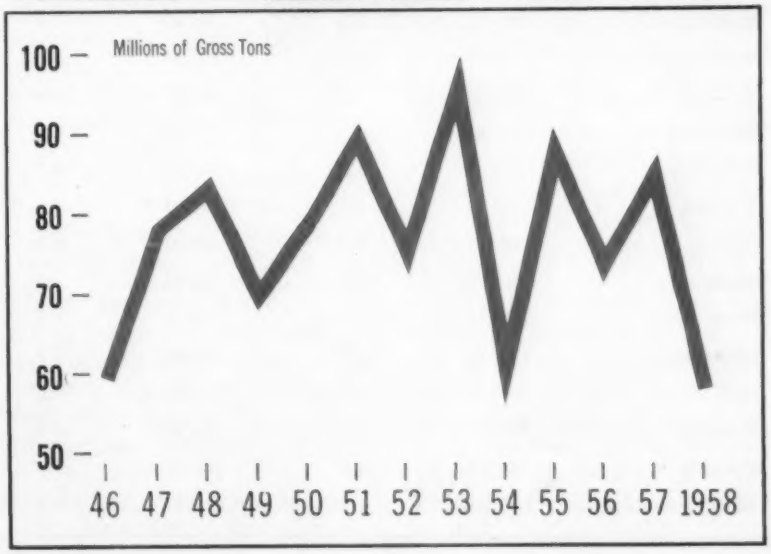
The Total Picture—Two figures crystallize this year's iron ore picture. Stocks on hand at U. S. and Canadian furnace yards and docks as of March 1 were 13.4 million tons more than the same time last year. Consumption the first two months of this year ran far behind last year at 15.8 million tons against 23 million. And there were only 164 out of 275 blast furnaces in operation March 1 compared to 258 a year ago.

One fortunate aspect of the loose market is that smaller steel companies will get a chance to give taconite a workout. Previously almost all tonnage has gone to steel companies participating in taconite projects.

Only limited amounts have been offered for outside sale. These were more for study and testing than production use.

Lake Shipments of Iron Ore

High Stocks Will Keep 1958 Shipments Low



Industry Foots Jobless Pay Bill

But Battle Rages Over Federal Intervention

Industry opposition to Federal proposals based on fundamentals, lack of urgency.

State reserve funds are adequate to cover emergency, opponents contend.

■ Industry is resigned to picking up the tab for the recession-generated surge in unemployment compensation outlays. But it is up in arms against the rash of proposals that would bring the Federal government into the act.

Industry's opposition to a Federal finger in the jobless pay pie is fundamental: It argues that (1) conditions do not warrant nationwide federal aid, (2) some proposals would tend to destroy the system of merit rating whereby firms with employment stability get a better break on the tax rate, and (3) proposals neglect the 1.9 million unemployed not covered by unemployment compensation.

Employers Pay All—All payments into UC funds come from payroll taxes, which totaled $1.5 billion last year. Weekly benefits are financed wholly by taxes on employers in all states with the exception of two, where employees pay a part of the tax costs. A federal tax of 0.3 pct and state taxes up to 2.7 pct are levied on the first $3000 paid each employee.

Last year the average tax rate for the country was 1.3 pct. Average rate is now 1.5 pct. At the current rate of depletion, UC outlays this year will top $3 billion, and tax rates will rise sharply next year or sooner in order to rebuild state reserves.

Administration Plan—The Eisenhower Administration's proposal to extend benefit weeks by 50 pct would add $500 million to benefit costs. This would be parceled out in the form of federal loans to the states, to be repaid in four years. Unless states make special appropriations for repayment (not likely, say authorities) the extra money would come from added federal or state taxes on companies.

This prospect has created surprisingly little stir in management circles. Industry is pretty much resigned to the cost of state compensation.

Oppose "Cradle-to-Grave"—But opposition is mounting against Federal extension of benefit periods. "If a man needs long-term aid, he should get it," says the opposition. "But he should not be paid under a program of employee rights and employer obligation. We must avoid the full-pay, cradle-to-grave type of compensation."

How Reserves Are Falling

Typical State Reserve Levels—End of Month

STATE	JANUARY		FEBRUARY	
	Dollars (millions)	Supply in Years	Dollars (millions)	Supply in Years
Alabama	$ 85.50	4.5	$ 84.9	4.1
California	970.63	5.7	956.63	5.1
Colorado	76.03	11.2	75.25	9.7
Connecticut	243.77	6.8	236.49	5.7
Illinois	487.53	5.6	478.38	4.9
Indiana	206.95	4.9	201.44	4.4
Kentucky	119.04	3.7	116.67	3.5
Maryland	111.52	3.9	107.43	3.3
Massachusetts	306.79	3.8	300.74	3.5
Michigan	278.06	1.9	257.78	1.6
Missouri	225.45	8.4	221.06	7.6
New Jersey	423.49	3.3	414.13	3.0
New York	1,325.78	5.1	1,313.96	4.8
Ohio	601.84	6.2	584.92	5.3
Pennsylvania	317.75	1.5	298.03	1.3
Rhode Island	30.15	1.5	29.14	1.4
Tennessee	88.45	2.4	85.79	2.3
Texas	297.24	9.0	294.77	8.2
Washington	200.38	4.7	193.57	4.4
Wisconsin	257.77	8.2	252.23	7.4
Total U. S.	$8,443.80	4.5	$8,261.00	4.1

As an alternative to the proposals now before Congress, industry is suggesting (1) a special program of relief or assistance to hard-hit states, (2) the program should not be imposed nationally since many states do not need it. (Unemployment is concentrated in nine states, which account for 62 pct of the jobless), and (3) special aid should be classed as relief or assistance, not as compensation. Unemployment compensation should not be turned into a permanent dole. It is a limited insurance, intended for temporary layoff transitions, paid as an obligation of the employer and a right of the employee.

State Reserves Adequate — Regarding the level of unemployment, it is pointed out that only about three million of the five million jobless fall under the compensation program. Of the covered group, about 400,000 have exhausted their benefits in the first quarter. That would be under 1 pct of the total work force. Opponents of the federal proposals say none of these figures is extreme when compared with past recessions.

In testimony before the House Ways and Means Committee last week, Frank B. Cliffe, U. S. Chamber of Commerce, made the point that most of the 48 states' reserve accounts are in good financial condition. (See chart).

How States Compare—At the current rate of disbursements versus tax collections, Mr. Cliffe said, 47 states could go on for a year or more before their reserve accounts would be exhausted; 44 could finance the drain on their reserves for two years or more; 23 states could go on for four years or more, and one — Louisiana — could continue for more than 38 years.

"We believe," he said, "that if in the judgment of the legislators in any state, unfolding conditions were to justify an extension of benefit duration, most of these states' reserve accounts are now adequate to finance larger net outgo without any federal intervention."

THE FIRST: Keel is laid for what Lakes shipbuilders hope will be the first of many Ocean going ships they will build. This is a destroyer.

Lakes Yard Will Bid On Ocean Ships

▪ A recent keel laying at Defoe Shipyard Co., Bay City, Mich., looms as one of the most important events in Great Lakes shipbuilding history. It heralds the start of competition with the East Coast for deep-water shipbuilding dollars.

The keel will grow into a 440 ft guided missile destroyer, the USS Henry Braid Wilson (DDG-7), first of a new class to be built for the U. S. Navy. Upon completion, in June 1960, it will be the largest vessel built on the Great Lakes for use on the ocean.

Navy Business—This is only the first of four guided missile destroyers to be built at Defoe's landlocked shipyard. A second keel laying is slated for mid-April. The contract calls for completion of the last ship by Autumn 1961.

Until now, employment at Defoe has run about 400 workers. As work progresses employment will climb until it reaches about 1350, where it is expected to stay through the completion of the four ships.

Credits Seaway — Thomas J. Defoe, company president, attributes the Navy contract directly to the St. Lawrence Seaway, which made it feasible for the firm to submit bids. "We began sometime ago to think in terms of what completion of the Seaway would mean to the Great Lakes region," he said, "particularly to shipbuilding and ourselves."

Mr. Defoe is positive about the outlook for his company. "We expect to go into competition with East Coast shipyards for ocean-going cargo ship contracts. Of course the Seaway is a two-way proposition. Coastal shipbuilders can bid for the Lake boats. We expect to be fully competitive."

NOT NEEDED: Here are part of the 33 forms that were scrapped when Republic's new system was installed.

Republic's New Order Network

Here's the latest in the continuing race to speed order processing in the steel industry.

Republic's new coast-to-coast hookup lops valuable hours off paperwork.

The system bypasses postal, telephone, and clerical bottlenecks.

▪ A souped-up nationwide order processing system which places completed steel orders on mills the same day they are taken is bringing in extra orders for Republic Steel.

The coast-to-coast network between district sales offices and mills sends a complete mill order form by punched tape and teletype from sales offices to be placed on the mill the same day it is received. Previously, a week's time was not uncommon. And an original 33 forms has been reduced to one.

Big Help to Sales—The new system, most elaborate in the industry, will handle 1000 orders in a typical market. It is now helping out in today's loose market because it drastically cuts the time required for paperwork to catch up with mill rollings.

It was described as the "fastest and most efficient system for handling customer orders and inquiries of any steel company in the country" by N. W. Foy, vice president of sales. Republic was also the first steel company to install a teletype ordering system in 1937.

How It Works—Basically, the new system depends on district sales offices making complete punched tape records of all sales information on an order. This is transmitted by wire to product departments which assign it to mills. The district message is duplicated exactly in product department service centers and in the central sales offices. It carries sufficient information so that no re-typing anywhere is needed.

Teams of sales, metallurgy, and production specialists in each service center expedite all orders. Taped information on 10,000 customers is kept on file so that on re-ordering, only the variables are re-typed.

Worthwhile Expense—The new system was developed by E. C.

Mausz, Republic's procedure committee chairman and Russell Widmer, assistant commercial research director, with about 40 people on various committees. Development took about three years.

Cost was well over $1 million alone for office rebuilding and relocating the service centers in mills, product, and district offices. Equipment is leased from American Telephone and Telegraph Co. It's more than paying for itself in savings.

Bypasses Bottlenecks—The Republic system differs from others in the steel industry in that the complete information necessary for a production order need be typed only once. This is enough to schedule and start production. Conventional teletype messages almost always require a written order follow-up, consuming several days in writing and mailing.

In addition, under the Republic system, service center teams quickly can give best scheduling from the right mill and approve metallurgy, shipping, credit status and other details. Phone garbling is also eliminated. And if the mill is going to miss a delivery date, sales offices are informed automatically.

Long Range Design — Looking into the future, Mr. Widmer expects that one day customers may be linked into the system so that their purchase orders will be one and the same with mill orders and can be reproduced in sales offices.

Also, provision has been made for taking off statistical and record information for commercial research and sales. It is also the groundwork for all electronic computer systems which may one day be doing mill scheduling and other operations.

Most other steel producers make up preliminary orders in teletype messages but actual production does not start until an order is mailed in. Republic's Detroit office, for instance, has about 15 orders per day in actual production at the mill and acknowledgments in the customers hands before the customer gets around to filling out a formal order.

AT WORK: The network's control panel at the switching center relays incoming orders to proper mill.

NERVE CENTER: View of entire automatic switching center at Republic's headquarters in Cleveland.

THE PLANNERS: E. C. Mausz (standing), and some of his staff who developed the streamlined system.

QUICK RE-ORDER: Customer's tape is pulled from file by employee. Only the variables are re-typed.

"Rotary Forging" Stirs Industry

Curtiss-Wright Imports Austrian Process

New process is said to show cost and weight savings for many typical forging applications.

SAE paper draws industry interest. C-W will begin its first production job shortly. A full jobbing department is planned. —By K. W. Bennett.

▪ "Rotary forging" is a term that will draw heavy interest in the months ahead. That's the name given by Curtiss-Wright Aeronautical Corp. to a cold-forging technique based on four die-faced hammers.

The process, now being imported from Austria, shows cost savings of 23 pct on typical applications on the basis of preliminary cost studies.

Cost Figures — Rotary forging was brought to industry attention last week at the Society of Automotive Engineers' Production Conference in Chicago. Basis was a paper by John F. Murphy of Curtiss Wright's Metals Processing Div.

The firm uses as a test case a forging that costs $10.75 on today's market. Rotary forging could do the job for $10. Machining of the conventional forging would cost $16.10, as compared with $10.79 for the rotary-forged part.

Less Weight Too—Total costs: $26.85 for the conventional compared with $20.79 for the rotary-forged part. Another plus factor: The as-forged rotary forging would weigh 20 lb. less.

In rotary forging, four hammers pound the vertical, rotating workpiece into a final shape. Hollow parts up to five in. OD and solid workpieces four in. diam are worked by the process.

The four hammers are mechanically controlled, through a master cam controller which alters the length of throw of the hammers. The shape of the workpiece comes from the shape machined into the hammer, acting as a forging die, and the length of the throw of the hammers. Inside shape of a hollow workpiece is dependent on the shaped mandrel.

Full Department Planned — Equipment is manufactured by an Austrian concern, Geselleschaft Fur Fertigstecknik Machenbau, which holds the patents. Curtiss-Wright will begin on a truck axle contract shortly after May 15, its first major production contract.

The firm will begin on one machine and expects to build up a full jobbing department.

Parts Tested Out—Test work has already been done on such bread-and-butter items as truck axles, tool joints, turbine shafts, tractor shafts, spline shafts, and general shafting.

The average as-forged part was 36 pct lighter than a conventional rough forging. For a truck axle, the previous rough forging weighed 53 lb. The rotary-forged item has been reduced to a 35-lb weight in the as-forged condition. Weight savings of stock in a tractor shaft amounted to 40 pct, and on general shafting ran 54 pct.

Curtiss-Wright points out that it is doing most of its own test rotary forging at "hot-forging" temperatures, for OD tolerances of plus-or-minus .012 in. or an ID tolerance of plus or minus .004 in.

At least one tool manufacturer in the U. S. is doing work on a rotary forging unit designed here in the U. S., a machine designed specially for cold-forging the interior of hollow workpieces.

What Rotary Forging Can Do

▪ The major advantage of rotary forging is that it allows forging of pieces of great intricacy and high tolerances.

For example, a workpiece having seven outside dimensions and four inside diameters, plus tapering joints, is forged in 40 seconds.

A forged rocket nozzle requires 30 seconds. A real machinist's nightmare, an intricate tube with a tapered end, followed by a small-diameter neck opening into a three-in. diam hollow ball, requires 15 seconds of forging time.

This latter assembly is forged from a 3.5-in. diam seamless tube of 10.5 in. length.

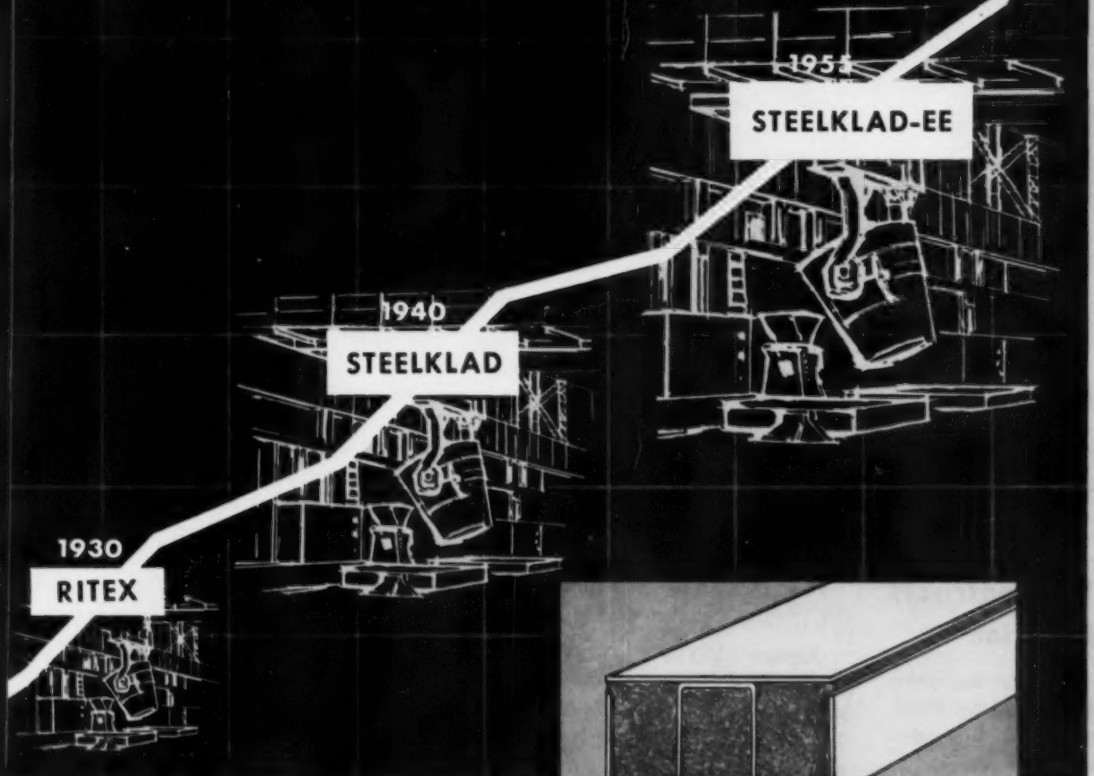
Heat exchanger tubes with flanged interiors, venturi tubes, and artillery shells have been produced by the method.

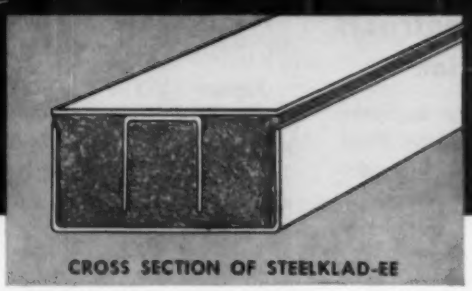
One tricky application is the forging of a light gun barrel in which the rifling is put into the bore by the forging process.

At the moment, the process is confined to Curtiss-Wright. But the SAE paper stirred up significant interest with major forgers, who are now examining data closely.

STEELKLAD-EE

The ORIGINAL Internally Plated Brick





CROSS SECTION OF STEELKLAD-EE

Steel production in the U. S. A. has more than doubled in the last quarter century. General Refractories' constant improvement of basic brick for steel making has greatly helped this striking growth.

Early in the period of expansion Grefco pioneered the development of chemically bonded RITEX brick. In the forties Grefco's STEELKLAD provided increased spalling resistance and still better refractory quality. Continuing research and study brought about the introduction three years ago of Grefco's patented STEELKLAD-EE. These brick have now proved themselves in a great many applications. In this short time STEELKLAD-EE has won a substantial and growing portion of the basic brick market. In many applications they have demonstrated increased life of from 25% to 50% over other basic brick.

The cut-away view shows how the STEELKLAD-EE internal plates are molded into the brick, making three bricks of one. These smaller refractory units are tremendously more resistant to the spalling and peeling action which has been characteristic of most basic brick on exposure to cyclical heating and cooling.

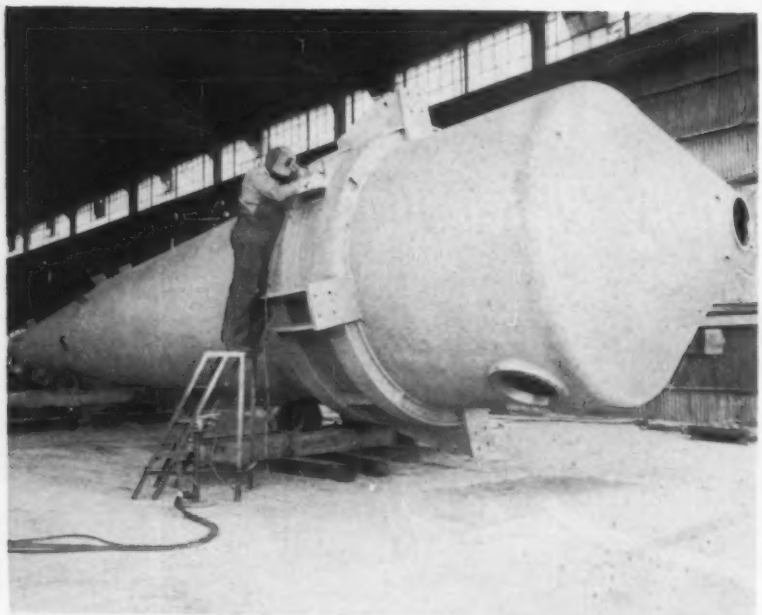
For expert advice on the use of this outstanding, new, basic refractory, consult your local Grefco representative.

A Complete Refractories Service

GENERAL REFRACTORIES COMPANY • PHILADELPHIA 2, PA.

GENERAL REFRACTORIES

King-Size Container for Rocket Fuel



TANKS FOR FUEL. A 9300 gallon tank, to be used to hold rocket engine fuel in development tests, gets a final weld before being shipped to Rocketdyne Div., North American Aviation. Made by Stainless Steel Corp., Los Angeles, of type 321 and 347 stainless from Allegheny Ludlum Steel Corp., the tank is 45 ft long and weighs 31,000 lb empty.

New Missile Contracts Total $116 Million

Missile contracts are beginning to dominate news from the Dept. of Defense. Recently, million dollar contracts were announced for work on the Jupiter, Sidewinder, Pershing, Talos and Terrier.

Sidewinder—Philco Corp., Philadelphia, and Light Military Electronic Equipment Dept., General Electric Co., were awarded contracts for production of the Sidewinder.

Philco's contracts amounts to $15 million, GE's to about $10 million. The companies will turn out the missiles for both the Navy and the Air Force.

Pershing—The Martin Co., for its plant at Orlando, Fla., has been named systems contractor for the solid-propellant Pershing Missile. This project will involve several million dollars immediately, and will amount to a multi-million dollar program within a few years.

Jupiter — The Chrysler Corp., Detroit has been awarded $25.7 million for further work on the Jupiter missile. The new agreement covers repair parts, and components for training.

Talos, Terrier — Sperry Gyroscope Co., division of Sperry Rand Corp., Great Neck, N. Y., has landed three contracts, totalling $63 million, for the production of major components for the Talos and the Terrier missiles.

Largest chunk, $59 million, is for the production of radar systems, and missile guidance radar for the Talos.

Asks for More Money

The Administration tells Congress it needs an extra $1.4 billion to buy new military hardware, chiefly missiles, in the fiscal year starting July 1. The additional money means the Pentagon would spend well over $41 billion in the next fiscal year.

In addition, the Administration is asking Congress to vote:

An extra $218 million for missiles and related equipment for the Army.

An extra $206 million for shipbuilding and ship conversion by the Navy.

An extra $180 million to study advanced research projects.

Spur Home Building

The new federal housing law, the first big anti-recession measure of the year, will help promote new home construction. But it will take some time to be fully effective.

Boost Economy—The new law, signed by President Eisenhower despite some features he considers "wholly inconsistent" with free enterprise, will eventually pump $1.8 billion into the economy.

Home mortgages will be more attractive to lenders making financing by both builders and buyers easier. It will also help restore housing demand by lowering down payments (about $400 on a moderately-priced house).

VA Housing—The measure also extends the veterans' housing programs for two years, increases the direct loan fund, raises the maximum interest rate by ¼ pct to 4¾ pct, and eliminates controls over so-called discounts or extra fees on FHA and VA mortgages.

Historic Mine Sold

The historic Ringwood (N.J.) Iron Mines, producer since before the Revolutionary War, have been sold for the second time in recent years by the Government.

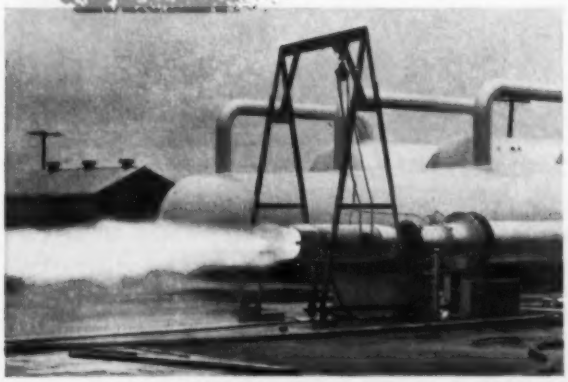
General Services Administration has tentatively approved a bid of $650,000 for the mine from the Pittsburgh Pacific Co., Hibbing, Minn. Pacific was the highest of four bidders. The sale is conditional on antitrust clearance by the Justice Department.

HAYNES Alloys solve the *tough* heat problems

Ramjet Tailpipes TAKE OVER 2,000 deg. F. at 1500 mph

Tailpipes made of MULTIMET alloy sheet only 0.051 to 0.078 in. thick withstand the extreme temperatures and vibration encountered during the operation of high speed ramjets. This is due to the superior high-temperature strength and resistance to oxidation of this HAYNES alloy.

MULTIMET alloy is one of the many HAYNES alloys capable of extending the service life of parts exposed to high temperatures, oxidation, and stress. For descriptive literature write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana. Or contact our nearest sales office . . . Chicago, Cleveland, Detroit, Houston, Los Angeles, New York and San Francisco.



Ramjet tailpipes are formed from MULTIMET alloy sheet in four sections. The entire assembly is over 2 ft. in diameter at the large end and nearly seven ft. long.

HAYNES ALLOYS

HAYNES STELLITE COMPANY

Division of Union Carbide Corporation

Kokomo, Indiana

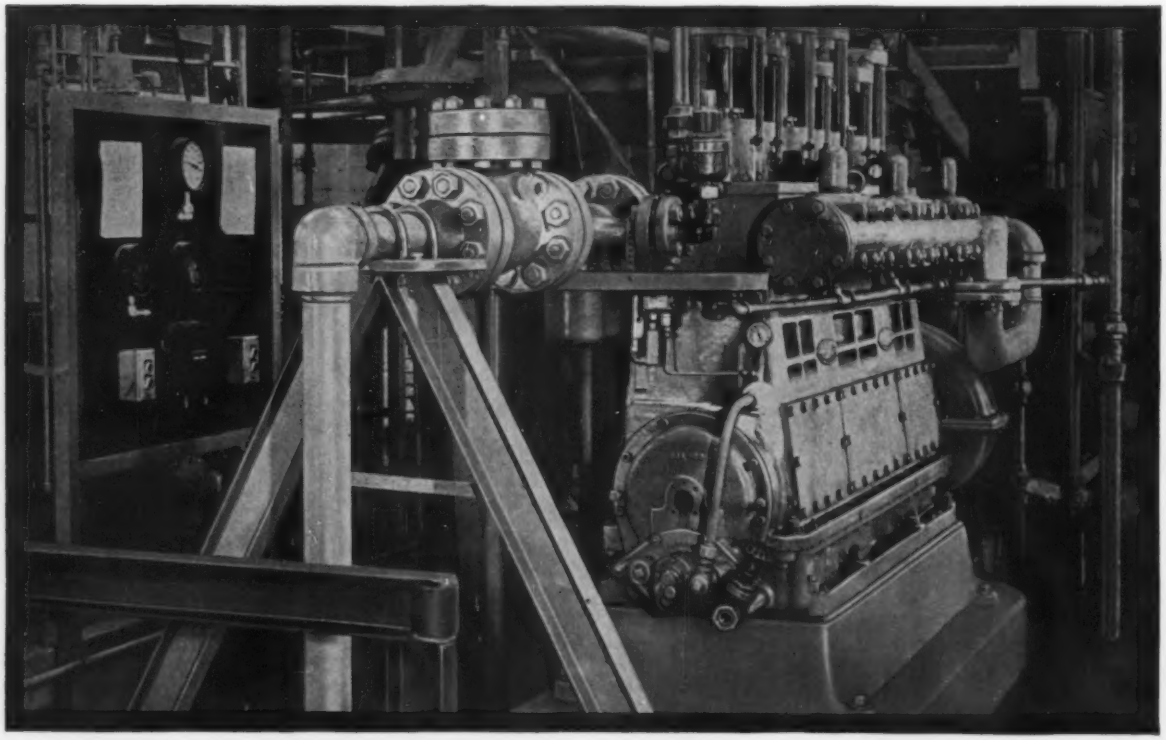
UNION CARBIDE

The terms "Haynes," "Multimet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

MIDWESTERN DIE CASTER FINDS ANSWER:

How to pump hydraulic fluids non-stop when downtime means loss of production

During "rush seasons," when shifts work around the clock, this large midwestern manufacturer must have constant, dependable hydraulic power. One hundred percent capacity can only be maintained when the hydraulic system delivers a steady output pressure with no downtime.



How the problem was solved: Foreseeing 24 hour days, seven days a week, the die caster turned to Aldrich. As new facilities were added, so were Aldrich Pumps. The first, a 250 gpm pump, was installed four years ago. Since then, three more 207 gpm pumps have been added. All are 2¼" x 5", 1500 psi, gear driven Aldrich Septuplex Pumps, equipped with 200 hp motors.

Result: Just what you'd expect of an Aldrich Installation—steady dependability for continuous operation—highest reliability for intermittent service. Maintenance is held to a minimum. Operating efficiency has remained constantly high. Get full information on Aldrich Pumps and their advantages. Write the Aldrich Pump Company, 8 Pine St., Allentown, Pa.

the toughest pumping problems go to ALDRICH

Myron A. Kendall

Dean of the Conveyor Engineers

For half a century Mr. Kendall has been leading the way in bulk material handling.

He designed the first successful long-haul belt conveyor 35 years ago.

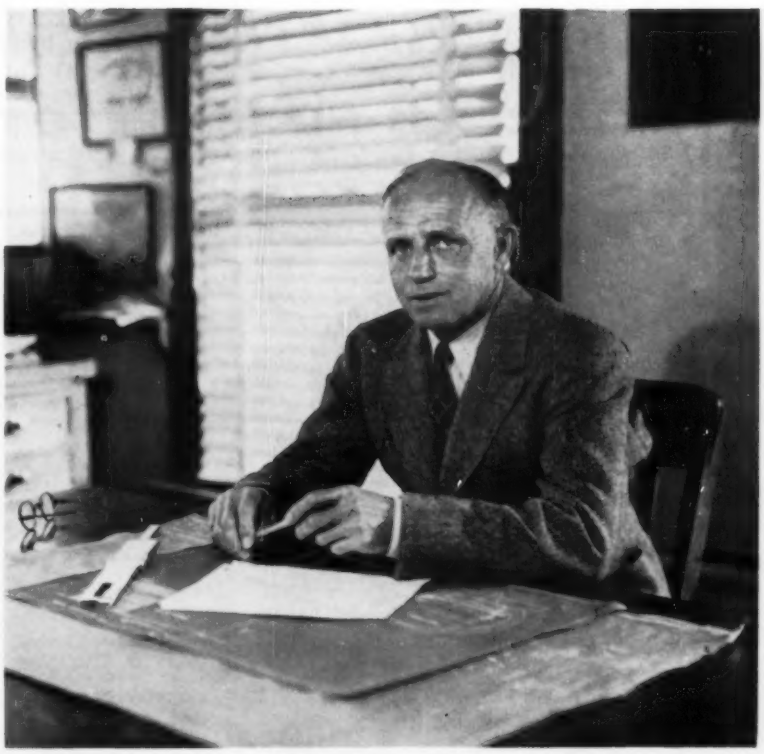
▪ Myron A. "Mike" Kendall, dean of the conveyor industry, has a string of engineering "firsts" to his credit that read like a log book of conveyor development.

During the past 50 years, whenever problems of terrain, distance, capacity, or economy in handling bulk materials arose, Mike Kendall came up with the answers. At 75, he is board chairman of Stephens-Adamson Mfg. Co., Aurora, Ill., and still is hard at work on several projects. One of them promises to surpass in scope anything that has gone before in the conveyor industry.

Getting started — The name of Myron A. Kendall first came into national prominence in the industry some 35 years ago. A four and a half mile conveyor system on the banks of West Virginia's Monongahela River was being heralded as the first successful long-distance belt conveyor.

It was designed by Mr. Kendall, a budding Stephens-Adamson engineer, for H. C. Frick Coal Co. The conveyor was not only significant for its size but furnished data for establishing factors in horsepower, belt life, anti-friction bearing performance, etc., which are still acknowledged throughout the industry. They were the sparks that fired economical long-distance bulk material conveying.

Mike Kendall's original system for the Frick Co. not only answered the firm's 1200-ton per hour handling requirements but has operated two shifts a day during the past 35 years.



MYRON A. KENDALL: Long-haul conveyors are the coming thing.

The List Grows—Some of his other pioneering ventures:

The first full turnover pivoted bucket carrier, the first live-shaft three-pulley carrier, the first self-unloading bulk cargo vessel, and the Carveyor, Speedwalk, and Speed-ramp passenger conveyor systems.

Mr. Kendall's early design for a self-unloading cargo vessel was built into the S. S. Wyandotte, S. S. Alpena, S. S. Calcite, S. S. West, and others. It has become the forerunner of several new self-unloading vessels recently engineered by Stephens-Adamson.

His Biggest Project—Presently, Mr. Kendall is chairman of the Lake Terminal Committee for the River Lake Belt Conveyor Lines. This committee is composed of engineers from many conveyor companies, electric companies, and other interested firms. Their aim is to design the first overland belt conveyor system for long distance transportation of bulk materials.

For his years of pioneering in the material handling industry, Mr. Kendall recently received one of engineering's most coveted honors —the American Society of Mechanical Engineers' "Fellow Award."

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SPECIFY WYCKOFF

Over the years Wyckoff has balanced its overall production facilities to meet the most exacting requirements of all specifications involving: Optimum Machining Properties . . . Accuracy . . . Outstanding Finish . . . Controlled Physical Properties through diversified Furnace Treatments.

Our technical staffs are always at your service.

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WYCKOFF STEEL PRODUCTS:
Carbon, Alloy and Leaded Steels • Turned and Polished Shafting • Turned and Ground Shafting • Large Squares • Wide Flats up to 12¾" x 2¼" and 14" x 1¼". All Types of Furnace Treated Steels.

Consumer Debt Turns the Corner

Two points to watch are instalment debt and level of manufacturer inventories.

Reversal of three-year uptrend in consumer debt reflects buyer conservatism. But it also frees cash for new buying.

▪ Two recent business developments deserve your closest scrutiny. One is a break in a consumer buying trend; the other a reflection of manufacturer buying intent.

First is the decline in instalment debt in February. The drop is the first decline since late 1954, halting an upward trend that continued longer than three years.

Low Durables Sales—The other is the decline in manufacturer inventories. This is important because the decline, while determined, still leaves inventories high in relation to rate of sales.

Without seasonal adjustment, the February drop in instalment debt totaled $435 million. This was $166 million more than seasonal. Decline was attributed generally to low sales of autos and other consumer durables.

Little Surprise — Autos actually accounted for $204 million of the decline in instalment debt, a development that came as no surprise to the harassed auto industry, its suppliers, and dealers.

You will have to weigh the significance carefully, since credit is an important factor in the consumer durables area of business. Credit has been available, although not as easy as, say, in 1955 when the great upsurge started.

Conservatism Reflected—The decline in instalment credit tends to reflect the growing conservatism of the buyer, his determination to cut his indebtedness, and his hesitation to incur new debt.

This combination of factors means hard selling ahead.

The possible bright spot: It also means that consumers are retiring their indebtedness faster than they are incurring it. Some of the heavy indebtedness, principally automotive, incurred in 1955 is finally being worked off.

It could mean that a new group of potential customers, out of the market for a period of retiring their instalment books, is ready to come back into the market soon.

Inventories Hard to Cut

A Big Problem—Manufacturers' inventories continue to drop, but are still uncomfortably high against a depressing rate of sales.

It represents one of the problems that confronts suppliers of goods and materials today. Manufacturers have been in active campaigns of inventory control for months, but have been unable to work off their stocks in the face of declining business.

Durable Goods Again — Inventories of durable goods dropped off $400 million in February, from $30.6 billion in January to $30.2 at the end of February, seasonally adjusted. This is still only $1 billion under the figure a year ago, but is a continuation of the downtrend that started in late 1957.

Meanwhile, durable goods industries saw their sales drop off from $12.6 billion in January to $12 billion in February.

Orders Not So Bad—Some encouragement that the bottom may be reached, or at least near, is indicated in the level of new orders. The Office of Business Economics reports that new orders in both durable and nondurable good groups declined only one pct from January, showing "relatively more stability."

There were increases in contracts for electrical machinery and aircraft companies, offsetting to some extent the declines in other major durables.

Referring back to inventories, OBE says four-fifths of the January-February decrease in all manufacturing inventories was in the durable goods sector, principally in the machinery and transportation equipment industries.

Gloomy Railroads

Railroaders, who are getting it from all sides in the business recession, are increasingly pessimistic.

Forecasts of car loadings for the second quarter indicate a decrease of 10.6 pct from the rate a year ago. In comparison, forecasts for the first quarter indicated a decrease of only 3.8 pct.

Carloadings for the second quarter are expected to total 6,505,353 for the three months compared with 7,278,355 actual loadings for the same period of 1957.

Biggest declines are expected in the Northwest, down 22.4 pct; the Great Lakes area, down 18.6 pct; and the Allegheny area, down 18.2 pct. The latter two areas in particular reflect the cutbacks in steel and automotive, both in shipments of finished goods and materials.

AUTOMOTIVE

Car Buyers Still Prefer Comfort

Price and Driving Economy Take a Back Seat

Total sales are off, but those who can afford a new car aren't lowering their sights.

Medium and luxury lines have increased their share of the market.—By H. R. Neal.

▪ A mild paradox has been developing in the auto sales picture for 1958. Medium price cars are holding their own, percentage-wise. There is no mass move towards lowest price models of Ford, Chevrolet or Plymouth. Only two low-price class makes report an increase in sales of six - cylinder models.

Picking out sales trends—particularly this year—is a hazardous business at best. Bearing this in mind, there is still some data and information worthy of attention.

Buying Patterns — The implication seems to be: People are not buying as many cars as last year —but those who buy are not lowering their standards.

For one thing, an analysis of new-car sales figures available so far for 1958 shows low-priced cars have lost a little ground to higher priced makes. High priced makes are making the best of a poor year by grabbing off a little larger chunk of sales than a year ago.

Low-Price Question—A possible explanation for this seeming paradox might be found in the nature of the buyer himself. Those who are in the market probably have not been affected directly by the current business trend.

Economy, while receiving a great deal of lip service, doesn't show up in the comparative sales figures. But there's no way of telling how many potential buyers have been forced entirely out of the market. Presumably, these would be buyers in the low-priced field.

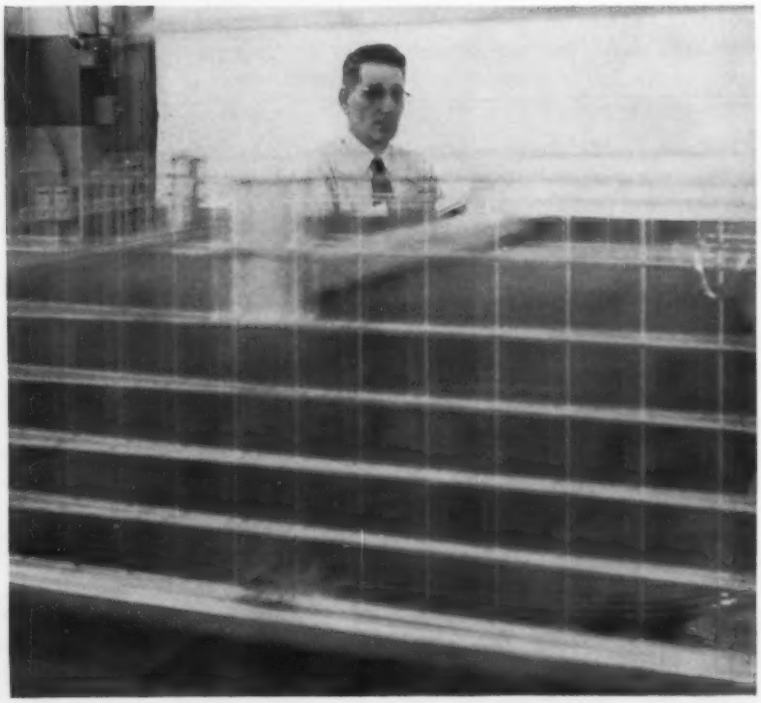
Medium Price Gains — Medium priced makes have shown slightly greater strength also. But the figures are all based on percentage of the market, not on comparative unit sales.

Cadillac, Lincoln and Imperial (collectively) have increased sales penetration to 4.19 pct of the market. Last year, it was an even 4 pct at this time. This is an increase of nearly 5 pct in penetration for the high price class.

Medium priced cars have boosted sales to 36.31 pct of the market, compared with 35.37 pct a year ago. This is a gain of 2.6 pct for this price class.

Chevvy Going Strong—A lumping of Chevrolet, Ford, Plymouth, Rambler and Studebaker shows a combined market penetration of 59.5 pct. This is a 1.86 pct drop from last year's showing of 60.63 pct at this time. The comparatively strong showing of Chevrolet and

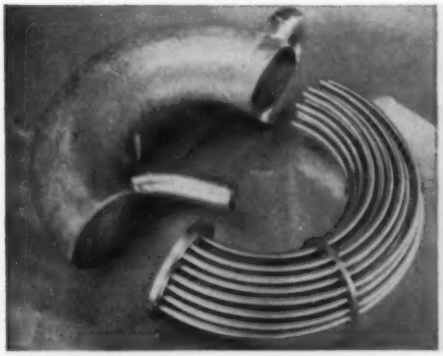
Windshields Have to Take It



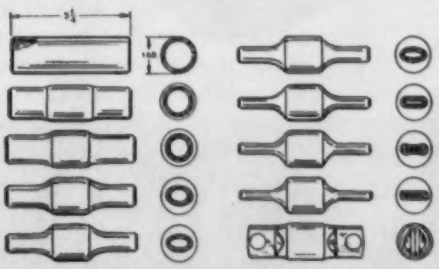
SIMULATED RAIL JOURNEY: Plate glass windshields at Ford Motor Co. undergo a vibration test to determine best means for packaging. Test duplicates bouncing and jarring glass gets en route to assembly plants.

Tray carts of *welded* stainless steel tubing utilize the beauty and lasting finish of stainless—the structural advantages of tubing.

Welded steel tubing telescopes accurately in this farm equipment application—machining is not required.



For critical service in temperature and corrosion applications welded stainless steel tubing shows its merit in this cold head for nuclear equipment.



This die-pressing sequence illustrates the ductility of welded steel tubing for severe deformation requirements.

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Carbon • Alloy • Stainless Steel

Only *welded* steel tubing can provide the inherent advantages of a hollow form's efficiency, strength and light weight *combined* with uniform wall thickness, concentricity, accuracy of dimension and ductility. Add to these your choice of surface finish, heat treatment, steel grade, size and shape.

You'll agree, only Welded Tubing can offer *all* of these design advantages. Your quality *welded* tube producer can always meet your exact specification.

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260 fact-packed pages of design data for Welded Steel Tubing. For your copy write on your company letterhead and give your title.

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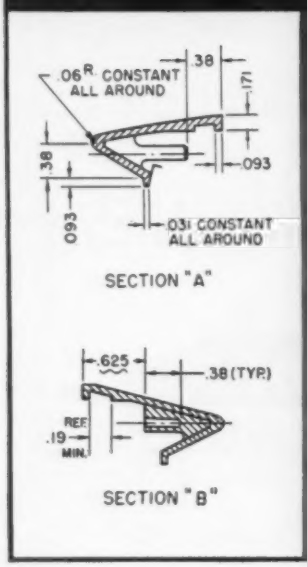

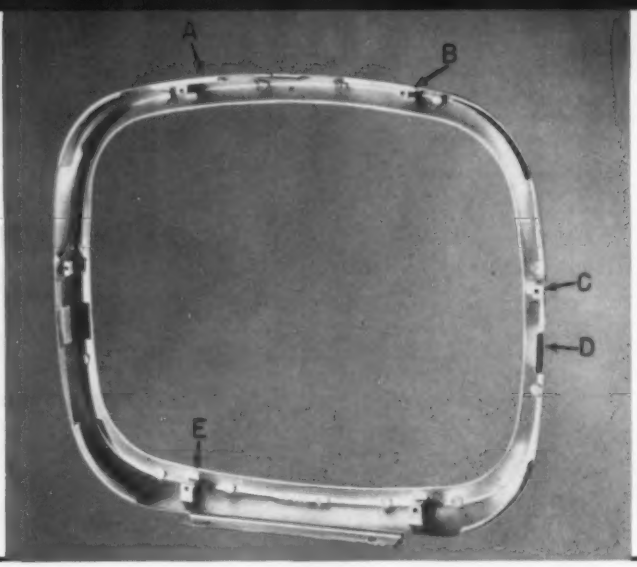

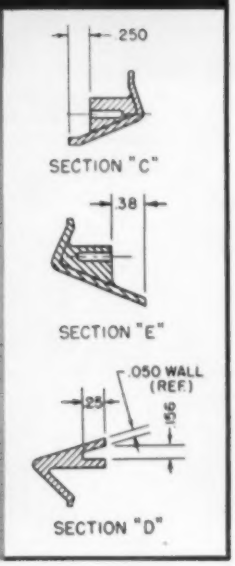

RCA

"HIS MASTER'S VOICE"

RCA Victor proves that the lightest metals do not always produce the lightest weight parts. This RCA Victor Portable Television Receiver is built with a ZINC Die Cast bezel and screen mask that weighs less than one pound, yet provides the strength and rigidity necessary for a structural part of the entire housing.

The sharply edged brow, thin wall sections, streamlined shape, compound curves and built-in conveniences for easy assembly are possible only by the die casting process. Die cast of ZINC, this bezel meets every requirement for the modern styling of the RCA Victor Flight-Line Series of receivers.

HORSE HEAD SPECIAL ZINC AND ZAMAK ARE PRODUCED BY

THE NEW JERSEY ZINC COMPANY

DEVELOPERS OF THE ONLY STANDARD ZINC DIE CASTING ALLOYS IN USE TODAY

160 Front Street · New York 38, N. Y.

HORSE HEAD PRODUCTS ®

Automotive Production

WEEK ENDING	CARS	TRUCKS
April 5, 1958	66,322	16,932
March 29, 1958	93,844	17,665
April 6, 1957	130,138	23,896
March 30, 1957	130,233	22,479
TO DATE 1958	1,293,800	241,600
TO DATE 1957	1,922,200	302,800

*Preliminary Source: Ward's Reports

Rambler undoubtedly bolster the showing of low priced makes.

The so-called low priced three indicate there hasn't been a significant increase in orders for their lowest priced body styles. Ford and Chevy declined to release figures for their various models for competitive reasons. But Chevrolet spokesman conceded there had been only a slight increase in the number of cars produced in the Delray series. However, he emphasized "the top two lines are still selling strongly.

Ford Reports—A Ford spokesman indicated its lowest priced series was running on about a par with last year which would place it in the area of one-third of production. The top line of Fairlane 500 models has lost some ground to the in-between Fairlane series.

Plymouth's lowest priced line, the Plaza, has continued the trend of recent years and accounts for a smaller share of Plymouth production than a year ago. So far this year, some 13.5 pct of production is in the Plaza line. Last year the figure was 15.9 pct and in 1956 it was 18.6 pct.

Extras Hold Up — Accessory items continue to do as well as last year, or show an improvement. Tabulations aren't available, as yet, but the company representatives say people want just as many conveniences as a year ago.

For example, Chrysler Corp. introduced the Sure-Grip differential on its 1958 line. It is an extra-cost item to cutdown wheel slippage in loose snow, sand, or ice. Chrysler and De Soto have included it on 15 pct of their production. Some 24 pct of Imperial production is equipped with the device. The figure is about 4 pct for Dodge, and about 1 pct for Plymouth. Company officials frankly admit the good showing is higher than expected, somewhat of a surprise.

Rejuvenation — Six-cylinder engines, steadily disappearing from the American market, seem to have gained a new lease on life. American Motors, stressing the economy of its Rambler series, said sixes currently account for 91.4 pct of production. In 1957 some 85 pct of Rambler production was equipped with the six-cylinder engines.

Dodge, the only medium-price car to offer both sixes and eights, reports demand for sixes has shown a sharp increase since the first of the year. In February 12.2 pct of Dodge cars were equipped with the old standby, compared with 4.4 pct in the same month last year. In January the figure was 6.5 pct, nearly double the 3.6 pct of 1957.

Counter-Current—But the trend hasn't gone that way for Ford, Chevrolet and Plymouth—the traditional six-cylinder engine market. Ford reports a very slight increase in sixes to just under 16 pct of production. Last year it was around 15 pct. Chevrolet production of sixes has dropped to 30 pct of production this year from 38 pct last year. Plymouth said 17.9 pct of 1958 model production is equipped with the six-cylinder engine. Last year it was 24.6 pct and in 1956 it was still 36.3 pct.

White Motor Acquires Diamond T

White Motor Co. has acquired the Diamond T Motor Co. for about $10.1 million, including Diamond T's inventories, patents, trade name and good will.

Diamond T will be operated as a wholly-owned subsidiary of White Motor with the name Diamond T Motor Truck Co. Z. C. R. Hansen, president, said he will continue as president of the new subsidiary.

THE BULL OF THE WOODS

WE GOT A LOT OF MODERN MACHINES IN SINCE I HAD YOU THRU TH' SHOP LAST TIME--TAKE THIS ONE---
THAT'S HOW MUCH MISERY A GUY WHO LOVES HIS WORK CAN CAUSE--HE TALKS 'EM INTO A TRIP THRU THE SHOP AFTER A BANQUET!
THEY'LL BE HERE SO LONG THEY'LL DEMAND PAY, THEN A RAISE!
THE ENTERTAINER
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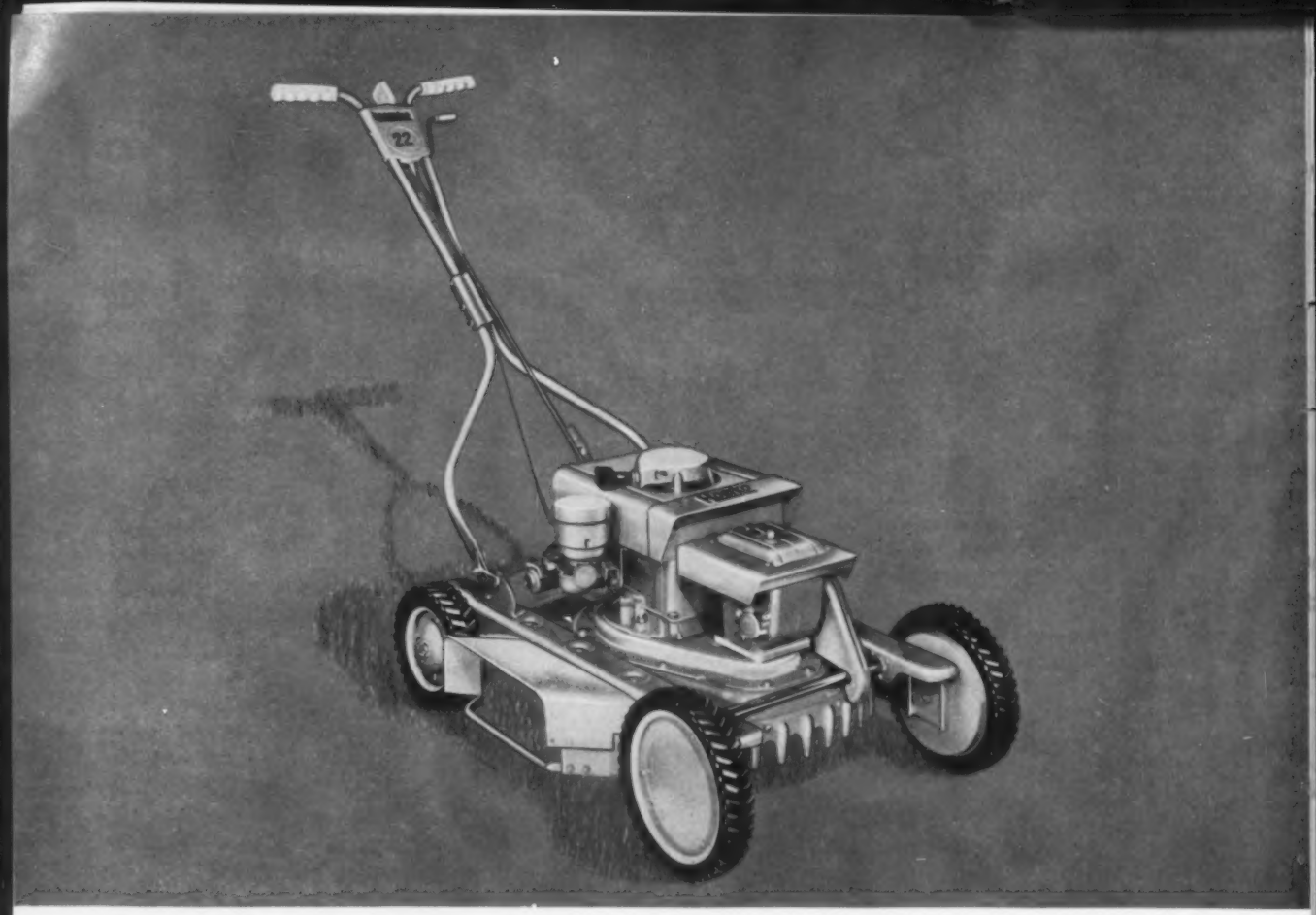

Homko Thunderbird—Western Tool and Stamping Company's *all steel swept-line* power mower—mows without pushing. Engine drives blade and front wheel. Modern equipment like this demands modern protection. *All* Western power mower bearings are factory-lubricated with Texaco.

"Texaco helps keep our machining costs down, our output up"

says Plant Superintendent Lawrence Hancock, Western Tool and Stamping Co., Des Moines, Iowa.

"As the world's largest power mower producer, Western Tool and Stamping makes and sells 500,000 power mowers a year. There's no time for machine downtime. We get longer tool life, better finishes and fewer rejects with Texaco products," says Plant Superintendent Hancock.

Product	*Advantages*
Texaco Sultex Cutting Oil	assures longer tool life and better surface finish on hard-to-machine metals.
Texaco Soluble Oil	keeps grinding wheels and machining operations clean, remains stable in hard or soft water, allows dirt to settle out rapidly.
Texaco Regal Oil R&O	protects hydraulic circuits, prevents rust, sludge and foam.

Texaco Cutting, Grinding and Soluble Oils can improve your machining picture, too. Call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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Election Hopes Ride on Upturn

Business Pickup Would Help GOP Candidates

Administration is cheered by signs that worst of the slump may be over.

If recession deepens, Democrats would increase Congressional margin.—By G. H. Baker.

▪ The Administration's stock is on the rise again. In recent months, it has fallen off sharply, due almost entirely to unemployment and the lack of industrial buying. But there are increasing signs, here and there, that the worst is over. It doesn't show yet, but there is some evidence that a pickup is already underway.

If Ike can end the recession by late summer, as he hopes to, Republican candidates should at least hold their own at the polls this November. But if business is still growling along in low gear six months from now, there seems little doubt but that Democrats will add to their present majorities in the Senate and in the House.

The Evidence—Here is some substantial evidence that economic recovery is already under way:

Unemployment is no longer on the rise. (Levelling-off showed up in late March.)

Auto production is up—slightly, but still up.

Machine tool orders have perked up substantially in the past few weeks.

New defense contracts are being issued daily from the Pentagon.

The Barometers — Watch the basic economic barometers closely in the next couple of weeks. Keep an eye on production of steel, autos, tools, and on the rate of industrial and residential construction. These probably will tell the story on whether or not we'll be out of the recession woods in the third quarter.

Tax Cut Decision Must Wait

The White House will wait until the April economic figures are compiled (in early May) before moving down the tax-cut path.

The President, according to White House aides, won't submit any tax cut plans to Congress until the economy's pulse has been measured for the full month of April. Serious work on a tax cut plan may begin in late April, however, if preliminary figures aren't hopeful.

Selective Cuts Planned—Should the recession continue to deepen through April at the high rate of January and February, and a tax cut is agreed on, a hot battle appears to be shaping up on the form it will take. The White House, insiders reveal, is leaning away from an across-the-board personal reduction, despite its obvious political appeal in an election year.

"If we cut, we'll cut selectively in the best possible manner to create jobs and stimulate business activity, not merely stick a few extra dollars in pockets of people who already have jobs," one top official says.

Business Favored — This would indicate an Administration leaning toward reductions in the corporate tax rate, excise taxes, and probably a special break for small business.

Chances are that if the Administration does back tax reduction, it'll have to go along with a small across-the-board personal cut.

Union Rackets Probe Bears Fruit

As a Safeguard — Early Senate approval is asked on a bill to prevent mishandling of employee welfare and pension plans involving over $29 billion.

Senate Labor Committee endorses the measure, requiring full disclosure of financial handling of the plans. Data on receipts and outlays, including paid benefits, would be filed with the U. S. Secretary of Labor. Purpose of the filing would be to safeguard accumulated funds from improper use by persons with access to them.

Half the Nation — Labor Committee estimates 40,000 or more welfare and pension plans will have to make reports if the bill becomes law. Employees and related beneficiaries of the plans may number up to 84 million.

This measure sets up penalties for embezzling funds, making false reports, or keeping fake records. The legislation is seen as a move toward the ending of dishonest operations in labor unions, as exposed by congressional inquiry.

No House Bill Yet—Disclosure bills also are before the House Labor Committee. Hearings on them were held last year, but no bill was reported to the House. Further hearings are to be held in the current session.

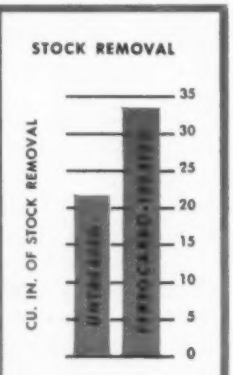
PROVED BY INDEPENDENT LABORATORY TESTS:

63% S•M•I*

for FERROCARBO®-TREATED MALLEABLE IRON

These important test results were obtained by a widely-known independent research laboratory on malleable iron castings produced by a large Midwest foundry, using untreated and FERROCARBO-treated iron of identical chemistry.

Chemical Analyses	Untreated	Ferrocarbo® Treated
TC	2.48	2.48
Si	1.30	1.40
Cutting speed (ft./min.)	185	185
Feed (in./rev.)	.009	.009
Depth of cut (in.)	.062	.062
Wear Land (in.)	.060	.060
Vol. of metal removed (cu. in.)	20.4	33.1
Weight of metal removed (lbs.)	5.2	8.5
Percent improvement		63.0%



* Surface Machinability Improvement

Tool wear tests were conducted with high speed tools of the M-2 type on castings machined at commercial speeds. Flank wear was measured with a 20 power microscope.

MALLEABLE IRON FOUNDRIES are now assured of superior castings regardless of the melting process—whether cupola, duplex, or air furnace—by the use of FERROCARBO, the patented additive by CARBORUNDUM. Various machining tests conducted under controlled conditions prove conclusively that FERROCARBO deoxidation makes possible the reduction or complete elimination of many of the casting difficulties experienced with undeoxidized malleable iron. For example...

- **INCREASED FLUIDITY** is readily apparent. Tests show a fluidity spiral increase over untreated irons. This means less mis-run castings.
- **GRAIN STRUCTURE** is also considerably improved with the dentritic pattern less pronounced in the test sprue. This means more uniform analysis, particularly in cupola or duplex operations.
- **MORE STEEL SCRAP** can be used and improved machinability obtained. This means better castings at less cost.

WRITE FOR MORE INFORMATION on how FERROCARBO produces more machinable iron regardless of metal composition. Ask for booklet A-1409, Electro Minerals Division, The Carborundum Company, Niagara Falls, N.Y.

VISIT OUR BOOTH at the 62nd Castings Congress and Foundry Show (Booth 524) Cleveland, May 19-23.

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West Catching Its Second Wind

The economy in the West is stumbling.

But businessmen there call it temporary, say the area will head up faster than the rest of the country.

Key factor is the population growth.—By R. R. Kay.

▪ The economy on the West Coast is stumbling. But local industrialists don't see the end to the area's overall growth.

The region is bound to reflect what is going on in the rest of the country, they say. Here it's only a pause after a long and spectacular climb.

Recovery—And recovery will be quicker than the nation as a whole, thanks to its built-in dynamism. There's plenty of evidence of this on the horizon. Best example: five million more people since 1950.

The U. S. Bureau of Census predicts huge numbers will keep flocking West for many, many years. It says the seven Far-western states will have about 23 million residents in 1960; and over 26 million in 1965.

Population Growth — In California alone, there are about 1500 new residents every day. At this rate the state will have 16 million people by 1960.

The present business dip may slow down the migration. But service companies — telephone, public utilities — are going right ahead with their expansion plans. They expect the area to keep growing. And they don't want to be caught short.

As the West grows, so must its industry. The bigger population will provide a hefty market for metal products made there.

Bulls on Long-Range—Farwesterners have the well-earned reputation of not being timid. Naturally, the current dip in metalworking bothers them.

But most businessmen have their sights fixed on the long-range outlook.

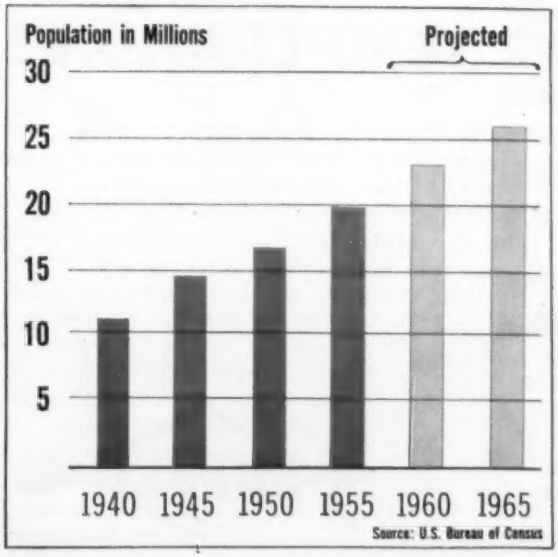
Kaiser Steel, for one, is banking on a much bigger market for its products. Their general planning dept. figures that by 1960 the seven Farwestern states will consume just under 8 million tons of steel, by 1965 almost 10 million tons.

Expansion — Kaiser Steel upped its expansion program 10 pct—put $20 million more into the pot. All told, the company is ploughing $214 million into new plants, equipment, and improvements. Some of the new facilities will be ready early next year.

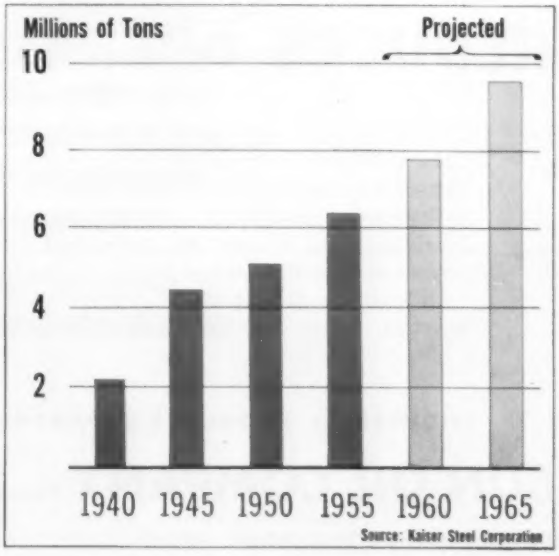
Bethlehem Pacific Coast Steel is increasing its Seattle capacity by 70 pct, to 420,000 tons.

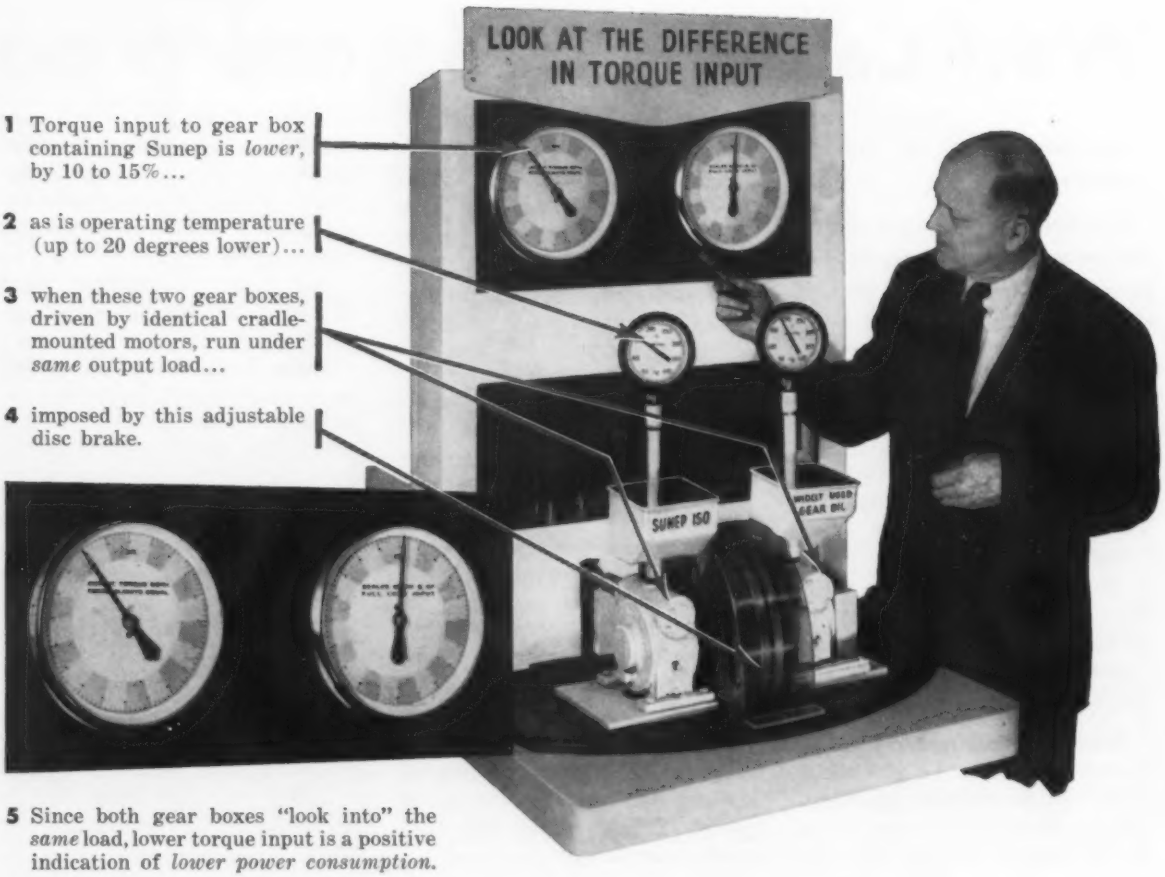
Seven Farwestern States: What's Ahead

Population Growth



Steel Sales




LOOK AT THE DIFFERENCE IN TORQUE INPUT
1 Torque input to gear box containing Sunep is *lower*, by 10 to 15%...
2 as is operating temperature (up to 20 degrees lower)...
3 when these two gear boxes, driven by identical cradle-mounted motors, run under *same* output load...
4 imposed by this adjustable disc brake.
SUNEP 150
5 Since both gear boxes "look into" the *same* load, lower torque input is a positive indication of *lower power consumption.*

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TIME AND AGAIN, under equal operating conditions, Sunep® gear lubricant has demonstrated its superiority over competitive oils. Sunep is a high-quality, extreme-pressure lubricant that is also recommended for screws and heavily loaded bearings.

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Brown & Sharpe Looks Ahead

No Resting on Laurels After 125th Year

The 125-year-old company is not at all discouraged by the present business slump. It's been through it all before.

It's coming up with new developments reflecting forward thinking.—By E. J. Egan, Jr.

▪ Announce a host of new products —machine tools, cutting tools and precision instruments—as you roll into your 125th anniversary year.

That's Brown & Sharpe Mfg. Co.'s way of showing that it's thinking is more youthfully vigorous than ever.

No Letup—As is true of all U. S. machine tools builders, the firm has been buffeted somewhat by adverse business winds. But in a century and a quarter, it's learned to take a lot of knocks and come up stronger after each workout. Most important, there's never any letup in forward thinking, in research and development.

Through its numerous divisions, the company has added more than 800 new products to its lines in the past two years, is busy even now designing dozens more to tempt the metalworking industry before 1958 passes on.

The Latest Developments—This month it's breaking stride briefly to call attention to a few of the newest and most important.

A production grinder that allows an unskilled operator to plunge-grind parts to within plus or minus ten millionths of an inch is right up near the top of the list. It embodies a new concept, called ceda/size, which means sizing based on controlled elastic deformation and alignment.

For Missiles—Aimed directly at the production of touchy guidance system components for missiles and supersonic planes, the new grinder is already in use in key defense plants. There it saves time and skills formerly devoted to lapping —in tiny servo valve pistons to specific cylinder bore sizes.

Pistons ground on the new machine will fit any bore that doesn't vary more than 0.0002 in. diam., and will maintain proper clearance within plus or minus 20 millionths of an inch.

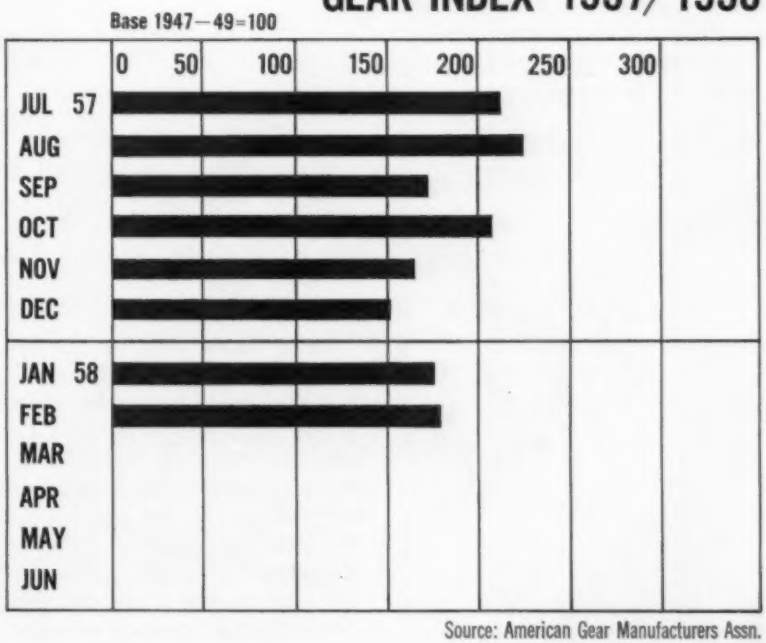
New Grinder—A new precision grinder, the Model 510, represents another of the candles on Brown & Sharpe's 125th birthday cake. Modestly priced and designed for hand operation, it uses a 7-in. diam. wheel to handle work-pieces up to 11 in. long, 5¼ in. wide, and 12¾ in. high.

Other features of the machine include: 1. A hand lever that adjusts to any convenient position; 2. an adjustable-drag table that glides in precision rollers; and 3. a one-shot lubricating system. A complete line of attachments and accessories is available.

More to Come—Not to be outdone by its machine tool cousins, the company's Metal Cutting Tool Div. is also having its anniversary innings. This group is announcing 134 new cutting tools.

And the Hydraulics Div. of the firm has two centrifugal pumps designed for general coolant applications on machine tools.

GEAR INDEX 1957/1958



Source: American Gear Manufacturers Assn.

INDUSTRIAL BRIEFS

Diversey Diversifies — The Diversey Corp., Chicago, has extended its operations in Canada and the West Indies with the opening of a new $750,000 plant in Clarkson, Ontario. The facility will serve as headquarters of The Diversey Corp. of Canada, Ltd., which has shown a steady growth in its 20 years from an original $20,000 investment to current total assets of more than $1.5 million.

In the Family — Inland Steel stockholders will be asked to approve an employee stock purchase plan at their annual meeting April 30. Stockholders will be asked to authorize issuance of 500,000 new capital shares and waive their preemptive rights to them. The shares would then be available for employee purchase under a program which may run for as long as 10 years. The plan would follow two stock option plans for employees under which more than 10,000 of the company's 30,000 employees have purchased shares.

Tops In Taps—Commemorating 18 years as an outstanding distributor for Vermont Tap & Die Co., Sterling Supply Co. was recently presented a bronze plaque. Sterling Supply was founded in Oct. 1935 by Edward Bernstein.

Sun Worship — Waltham Precision Instrument Co., Waltham, Mass. has acquired Thermal Dynamic Products, Inc., New York. Thermal Dynamic, functioning as a division of Waltham, is now producing a line of fully automated solar furnaces and aro-image furnaces. It is reported that Thermal Dynamic has an ultrasensitive infra-red detection system under development. The company is planning to produce the first multi-element image furnace, a revolutionary high-temperature research unit.

New Scrap Contract—H. Klaff & Co. has increased its scrap purchasing activities throughout the Southern and Southeastern part of the nation. H. A. Keefe has been appointed company representative for the area. Mr. Keefe may be reached at 610 N. Glenwood Ave., Clearwater, Fla.

Southern Exposure — The Producto Machine Co., Bridgeport, Conn., in conjunction with Southern Tool Distributing Co., Atlanta, Ga., will operate a die set assembly warehouse in the latter city beginning May 1. A complete line of Producto precision die sets, die makers' accessories, and toolroom equipment will be included in the new assembly operation.

Measure of Service—A marketing device to enable the customer to distinguish quickly the heavy-coated from the light-coated side of differentially-coated tin plate has been installed in the tin mill of Jones & Laughlin Steel Corp.'s Aliquippa Works. The device will be a service to J&L customers who fashion tin plate into containers for a wide range of foods and products.

Elbow Room—The Onsrud Machine Works, Inc. has relocated its Portable Tool Div. from 3900 Palmer St., Chicago to 7720 Lehigh Ave., Niles, Ill. Space for enlarged engineering and manufacturing facilities will be provided for the production of the line of Onsrud air turbine motors, portable air turbine grinders, and precision air turbine grinders for machine mounting.

Pan American Grind — Norton Co., Worcester, Mass. and Carbometal, S. A. of Mendoza, Argentina have formed a new company to produce silicon carbide for the Argentine market. Called Norton Casali, S. A., the company will build an electric furnace plant on a 10-acre site in Mendoza. Construction on the $500,000 project is scheduled to begin in May and completed by the end of 1958.

Two-Way Switch—Square D Co. and Electric Controller & Mfg. Co. are erecting a 10,000 sq ft regional headquarters building in Pittsburgh. Square D and Electric Controller, the latter acquired in a merger two years ago and operated as a Square D division, make electrical controls and systems for the steel industry. The facility will be occupied under a long term lease. It will provide warehouse space besides housing regional and district offices.

New Bendix Division—The name of Bendix-Skinner Div. of Bendix Aviation Corp., Madison Heights, Mich., will be changed to Bendix Filter Div. The Division's West Coast Poroloy Equipment, Inc., plant, Van Nuys, Calif., will now be designated as the West Coast Branch of the Bendix Filter Div. This plant has been operated as a wholly-owned subsidiary of Bendix Aviation Corp. since its acquisition in August, 1957.

Nitrogen Pocket—New nitrogen supply facilities have been put into operation in Houston, Tex., and Tulsa, Okla., by Linde Co. Units are known as VST installations and will be used to store large quantities of liquid nitrogen. Both units will be filled by railroad tank cars from Linde's nitrogen producing plant in Houston.

Across the Border — National Electric Products Corp., Pittsburgh, has formed a Canadian subsidiary, Nepco of Canada, Ltd., with plant and offices in Woodstock, Ontario. The Canadian plant will be the first manufacturing facility which National Electric has built outside the U. S. Other plants are located in Linden, N. J., and Ambridge, Pa.

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Less Kerf . . . Best Non-Ferrous Cutting

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HARD RIM SAW

This Simonds solid saw (new to the market) has already made a *solid* hit! The men who have to get the work out are sold on the Simonds "Hard Rim's" longer cutting life between sharpenings . . . the better finish it imparts to the non-ferrous metals and plastics it cuts so smoothly . . . the minimum kerf as against non-solid saw cutting. Yes and everyone likes the Simonds "Hard Rim" because of its non-shattering safety when run at high speeds and the protective advantages to personnel.

This very true cutting saw is available in diameters of 8″ to 18″. Try it out — call your Simonds Distributor!

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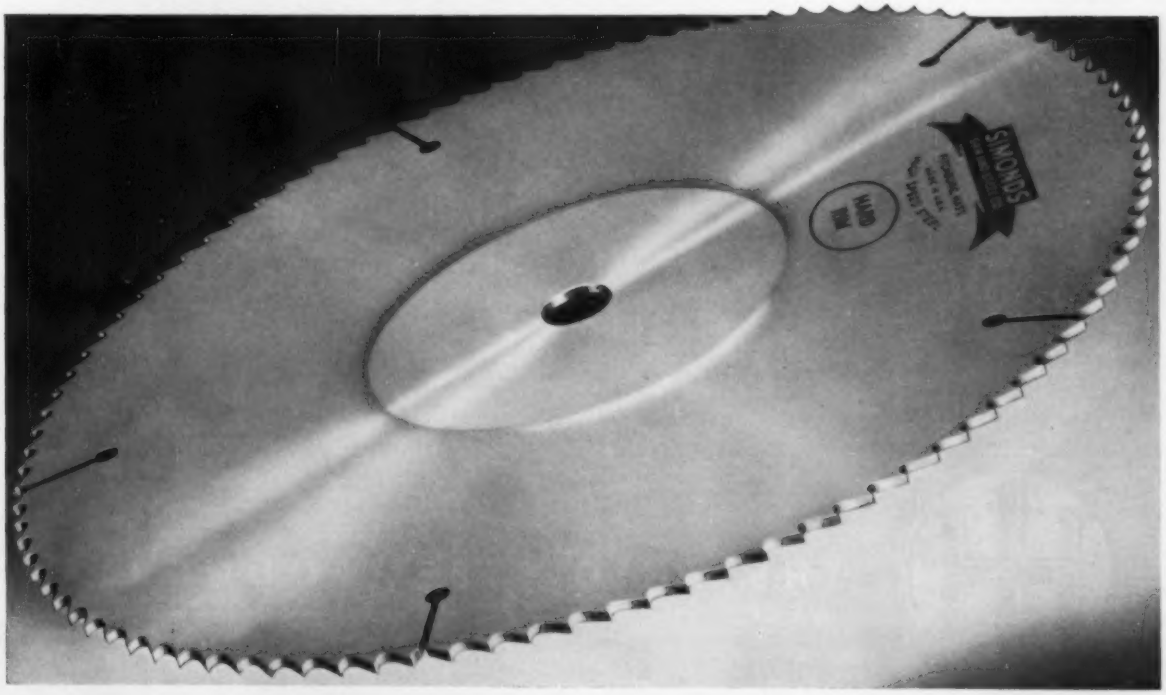
Heller Tool Co., Newcomerstown, Ohio, Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada



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O. P. Carter, elected president, Midwest Piping Co., Inc., St. Louis.

C. L. West, named chairman of the board, The Electric Furnace Co., Salem, O.; **F. T. Cope, Jr.,** becomes vice president, sales.

P. E. Berndt, appointed vice president, engineering and manufacturing, Harvill Corp., Los Angeles.

C. M. Beeghly, elected executive vice president, Jones & Laughlin Steel Corp.

F. J. Close, named general manager, Sales Development and Commercial Research Divisions, Aluminum Co. of America, Pittsburgh.

C. W. Pinkham, appointed manager, instrument transformer engineering, General Electric Co.'s Instrument Dept., West Lynn, Mass.

A. C. Johnson, appointed production superintendent, Robins Conveyors Div., Hewitt-Robins, Inc., Passaic, N. J.

D. S. Gibson, elected vice president, purchasing, Worthington Corp., Harrison, N. J.

M. M. Watkins, becomes president, Conoflow Corp.; **J. C. Koch,** named executive vice president.

C. F. Venrick, appointed vice president, railway sales, American Car and Foundry Div., ACF Industries, Inc.

F. G. Sorensen, Jr., appointed plant superintendent, Elmes Engineering Div. and King Machine Tool Div., American Steel Foundries, Cincinnati.

W. A. Reich, appointed manager, engineering section, General Electric Co.'s Metallurgical Products Dept., Detroit.

G. E. Armington, named vice president, engineering, Euclid Crane & Hoist Co., Euclid, O.

J. J. O'Connor, appointed vice president, international operations, Borden Chemical Co.

P. A. Wing, appointed vice president, sales, Smith-Scott Co., Inc., Riverside, Calif.

G. B. Roberts, appointed controller, Young Spring & Wire Corp., Detroit.

H. M. Thorpe, appointed manager, quality control, General Electric Co.'s Medium Steam Turbine, Generator and Gear Dept., Lynn, Mass.

A. F. Meyer, appointed Cleveland district sales manager, Kaiser Aluminum & Chemical Sales, Inc.

M. O. Luft, appointed asst. to district manager, sales, Chicago district, U. S. Steel Corp.

G. H. Nutman, appointed vice president, Lipsett Steel Products Inc., Philadelphia.

C. R. Spencer, appointed executive vice president, Lynchburg Foundry Co., Lynchburg, Va.

M. C. Butters, named executive vice president, Brubaker Tool Corp., Millersburg, Pa.; **G. N. Fairchilds,** named vice president, sales;

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J. W. Elliott, named vice president, manufacturing; **J. E. Barnette,** named secretary and treasurer.

W. D. Schelbe, appointed director, purchases, Wolverine Tube Div., Calumet & Hecla Inc., Allen Park, Mich.

A. W. Smiley, named treasurer, Latrobe Steel Co., Latrobe, Pa.

P. G. Fellinger, named product manager, R. D. Werner Co., Inc., New York.

K. C. Wizeman, appointed product manager, metal packing line, The Garlock Packing Co., Palmyra, N. Y.

R. W. Marriott, named product manager, stainless steels, Whitehead Metal Products Co., Inc., New York.

J. W. Watson, promoted to director, purchases, Continental Aviation & Engineering Corp., Toledo, O.

C. B. Hoffman, appointed manager, Precision Equipment Div., The De Laval Separator Co.

R. W. Grady, appointed standard products sales manager, Hartford Machine Screw Co., Div. of Standard Screw Co., Hartford, Conn.

J. L. Herbold, appointed Northeast district manager, Campbell Chain Co.

W. R. Carlson, appointed Press Division district sales manager, New York area, E. W. Bliss Co.

E. R. Gazdik, named eastern regional engineer, Automatic Molding Machine Co., Div. of Wagner Bros., Inc., Detroit.

J. P. Jansson, named manager, architectural sales, Aluminum Div., Olin Mathieson Chemical Corp.

J. K. Rudd, becomes manager, Custom Products Div., Richardson Scale Co., Clifton, N. J.; **W. R. Runo,** becomes manager, Standard

Products Div.; **S. M. Dix,** becomes manager, Resale Products Div.

R. A. Martinson, appointed works manager for all plants of the Ramapo Dept., Railroad Products Div., American Brake Shoe Co.

P. M. Tunison, appointed director, engineering, Judson L. Thomason Mfg. Co., Waltham, Mass.

J. L. Knighton, named asst. sales manager, transmissions operations, Allison Div., General Motors Corp., Indianapolis, Ind.

C. J. Holcomb, appointed senior field engineer and **H. W. Werhan,** appointed field engineer, Chiksan Co., Brea, Calif.

S. P. Hull, named sales manager, H. K. Metalcraft Mfg. Corp., New York.

Following appointments are within the Manufacturing and Repair Div. of Westinghouse Electric

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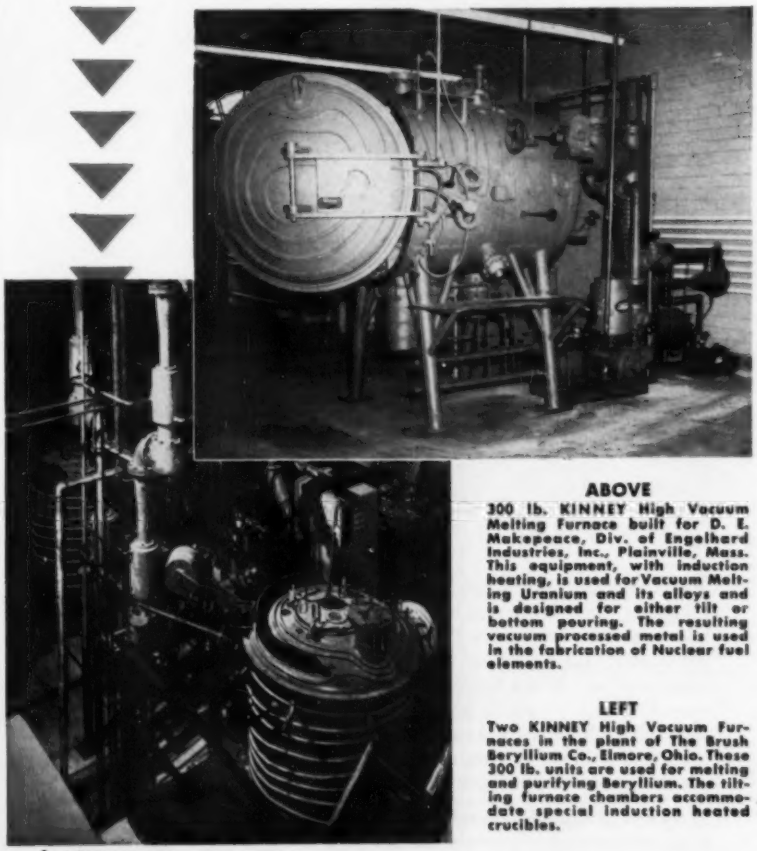
HIGH VACUUM FURNACES

The increasing demand for metals of high purity is now well beyond a few specialized applications. The obvious improvements in the properties of the metal on the one hand—and, the superior end product with minimum rejects, on the other, spell out the need for advanced type furnace equipment NOW! KINNEY High Vacuum Furnaces are exciting high interest among metallurgists both through their performance and the insight of your problem exhibited in their engineering! Whether your interests lie solely in ferrous metals or any of the so-called "exotic" group, you will want to know more about *What Kinney is Doing.*



ABOVE

300 lb. KINNEY High Vacuum Melting Furnace built for D. E. Makepeace, Div. of Engelhard Industries, Inc., Plainville, Mass. This equipment, with induction heating, is used for Vacuum Melting Uranium and its alloys and is designed for either tilt or bottom pouring. The resulting vacuum processed metal is used in the fabrication of Nuclear fuel elements.

LEFT

Two KINNEY High Vacuum Furnaces in the plant of The Brush Beryllium Co., Elmore, Ohio. These 300 lb. units are used for melting and purifying Beryllium. The tilting furnace chambers accommodate special induction heated crucibles.

Write for the Progress Report on new developments in Kinney Furnaces.

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Corp.: **V. J. Cozzarin,** named manager, Cincinnati manufacturing and repair plant; **A. C. Del Col,** appointed manager and **H. L. Potter,** named superintendent, Cleveland repair plant.

Henry Lipkind, appointed chief chemist, Belleville, N. J., plant, L. Sonneborn Sons, Inc.

A. E. Amadon, appointed manager, Nycor Sales Div., Graton & Knight Co., Inc., Worcester, Mass.

J. H. Clark and **T. R. Aberant,** appointed marketing analysts, Pittsburgh Plate Glass Co., Pittsburgh.

S. H. Grace, appointed acting manager, Marion, O. plant, National Can Corp.

O. F. Frost, appointed equipment sales manager, AC Spark Plug Div. of General Motors.

H. E. Temple, named director, research and development, Baker Perkins Inc., Saginaw, Mich.

To connect a Hansen Two-Way Shut-Off Coupling, you merely pull back the sleeve and push the Plug into the Socket. To disconnect, just pull back the sleeve. No tools required. When Coupling is disconnected, similar valves in Socket and Plug shut off both ends of line—practically eliminate spilling of liquid or escape of gas at instant of disconnection.

Hansen Series HK Two-Way Shut-Off Couplings are available with female pipe thread connections from ⅛" to 1" inclusive. Available in brass or steel. Sizes generally required for L-P Gas service have approval of Underwriters' Laboratories.

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Here's an always ready reference when you want information on couplings in a hurry. Lists complete range of sizes of Hansen One-Way Shut-Off, Two-Way Shut-Off, and Straight-Through Couplings—including Special Service Couplings for Steam, Oxygen, Acetylene, etc.

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W. A. Thompson, appointed resident managing director, Varley-FMC, London, England, British subsidiary of Peerless Pump Div., Food Machinery & Chemical Corp.

E. A. Schmidt, elected commercial vice president, I-T-E Circuit Breaker Co., Philadelphia.

D. B. Valk, appointed sales engineer, Fabricated Products Div., The M. W. Kellogg Co., New York. subsidiary of Pullman Inc.

J. T. Patterson, appointed service supervisor, Allis-Chalmers West Allis Works.

J. J. Buckley, appointed vice president, all company divisions, J. Bishop & Co. Platinum Works, Malvern, Pa.

G. L. Moran, appointed vice president, Chemical and Metallurgical Div., Sylvania Electric Products, Inc., Towanda, Pa. **M. W. Kremer,** appointed vice president, Parts Div., Warren, Pa.

J. T. Whelan, Jr., named sales engineer, Omaha, Neb., area, Mine Safety Appliances Co., Pittsburgh.

H. L. Brandenburg, named manager, Greenville, Mich., operation, Hupp Aviation Co.

Following appointments are within the Girdler Process Equipment Div., of National Cylinder Gas Co., Chicago. **B. D. Miller,**

named vice president, manufacturing; **A. M. Bond, Jr.,** named director, engineering and product development; **N. T. Joyner,** appointed general sales manager.

T. F. Griffin, named general manager, purchases, Worthington Corp., Harrison, N. J.

W. W. Morgan, appointed manager, aluminum products, The Universal Steel Co., Cleveland.

J. M. Crockett, appointed manager, Birmingham district, Air Reduction Sales Co.

P. W. Trump, appointed asst. manager, Proposition Dept., The Babcock & Wilcox Co.'s Boiler Div.

V. L. Renninger, promoted to division controller, Power Tool Division, Rockwell Mfg. Co.

R. R. Dickey, appointed sales manager, Ross Operating Valve Co.

M. A. Jackson, appointed sales representative, Indiana and Ohio area, Wolverine Tube, Div. of Calumet & Hecla, Inc., Detroit.

OBITUARIES

E. W. Riemenschneider, former vice president, engineering, Union Metal Mfg. Co., Canton, O.

P. E. Hays, 61, superintendent, river transportation, Crucible Steel Co. of America.

H. B. Luria, 55, president, Luria Steel & Trading Corp. and Luria Engineering Co.

C. C. Chambers, president, Texas Steel Foundry Co., Lufkin, Tex.

Pin is inserted over collar placed on tail, gun then engages pull grooves, draws material together and pulls pin into hole. Collar is swaged into locking grooves and pin tail then is broken off at breaknock groove. Action takes place in the time it takes to pull trigger.

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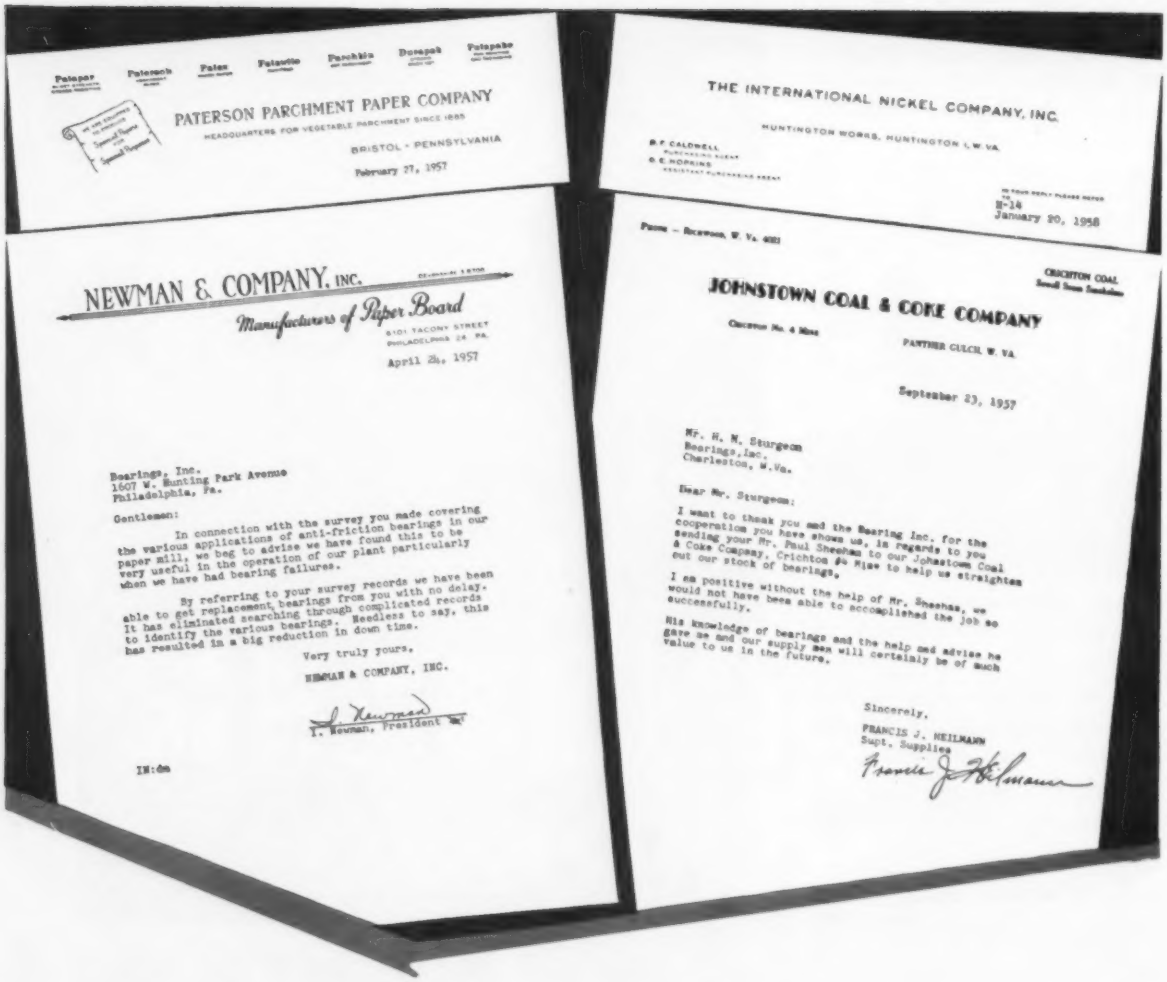

PATERSON PARCHMENT PAPER COMPANY
HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885
BRISTOL - PENNSYLVANIA
February 27, 1957

THE INTERNATIONAL NICKEL COMPANY, INC.
HUNTINGTON WORKS, HUNTINGTON 1, W. VA.
B-14
January 20, 1958

NEWMAN & COMPANY, INC.
Manufacturers of Paper Board
6101 TACONY STREET
PHILADELPHIA 24, PA.
April 24, 1957

Bearings, Inc.
1607 W. Hunting Park Avenue
Philadelphia, Pa.

Gentlemen:

In connection with the survey you made covering the various applications of anti-friction bearings in our paper mill, we beg to advise we have found this to be very useful in the operation of our plant particularly when we have had bearing failures.

By referring to your survey records we have been able to get replacement bearings from you with no delay. It has eliminated searching through complicated records to identify the various bearings. Needless to say, this has resulted in a big reduction in down time.

Very truly yours,

NEWMAN & COMPANY, INC.

I. Newman, President

IN:dm

JOHNSTOWN COAL & COKE COMPANY
PANTHER GULCH, W. VA.
September 23, 1957

Mr. H. M. Sturgeon
Bearings, Inc.
Charleston, W.Va.

Dear Mr. Sturgeon:

I want to thank you and the Bearing Inc. for the cooperation you have shown us, in regards to you sending your Mr. Paul Sheehan to our Johnstown Coal & Coke Company, Crichton #4 Mine to help us straighten out our stock of bearings.

I am positive without the help of Mr. Sheehan, we would not have been able to accomplished the job so successfully.

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Sincerely,

FRANCIS J. HEILMANN
Supt. Supplies

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How and Where to Use Shielding Gases for Welding

By O. T. Barnett—Asst. Manager, Metals Research Dept., Armour Research Foundation, Illinois Institute of Technology, Chicago

No one shielding gas is best for all welding jobs.

But there's one gas which is better for each job. The question is, "Which one?"

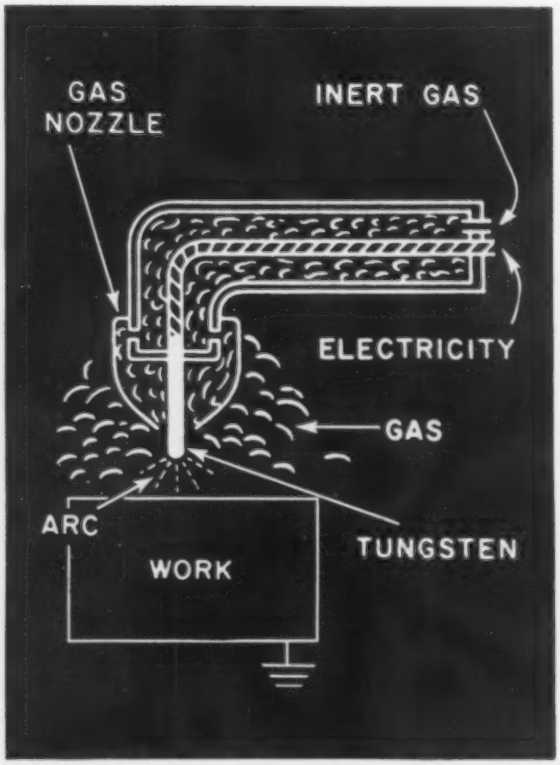
Here's a practical appraisal of the various gases with the "hows" and "wheres" of using them.

■ Gas-shielded arc welding is no longer the one-gas, one-metal process which it was about 15 years ago. New developments have unfolded so fast, and the processes are now so varied, that the selection of the best welding system for many jobs has become a major problem.

There's always weld quality to consider. The problem of cost is another. Sometimes, there's the question of weldability of a material. But as basic and simple as such considerations may seem, the welding engineer must face a number of other decisions squarely. Which process? Which gas? Or mixture? What type of current? Equipment? And in finding the answers, he must also consider material thickness, joint design, welding position, plus many other variables.

List of Metals Grows—If you've kept tabs on gas-shielded arc welding development, you're aware that after magnesium, a number of other "difficult-to-weld" metals and alloys have been welded successfully and

TOUGH JOB: Welding looks routine on this aluminum bronze rudder but it took Mags welding and stranded wire to do a satisfactory job. Strands of copper, aluminum and iron form the alloy. Airco photo.



TUNGSTEN ARC: The Tags process has four basic elements—tungsten electrode, gas, current and work.

FEEDING ROD: A non-consumable electrode is used in Tags welding. Filler metal must be fed externally.

economically. Among the nonferrous materials are aluminum, copper, nickel, titanium, zirconium and their alloys. The ferrous metals and alloys include mild steel, low-alloy high-strength steel, stainless steel and galvanized steel.

At first, either argon or helium was used with a non-consumable tungsten electrode. Joints were designed so that no filler metal would be needed. Where filler metal was required, it was fed externally.

This process, commonly called Tig welding, radically changed welding practice on nonferrous metals. Aluminum, for example, had been welded by the oxy-acetylene and coated - electrode metal - arc processes. But both of these required the use of a corrosive flux, making post-weld cleaning an absolute must for good weldment life. Tig welding eliminated both flux and cleaning in one swoop.

Copper, too, was a problem child of welding engineers and welders alike. It could be welded, but with enough difficulty to make them wonder whether it was worth the trouble. Tig welding changed much of their thinking.

At present, the bulk of Tig welding is on aluminum and stainless steel, with the split being about half and half.

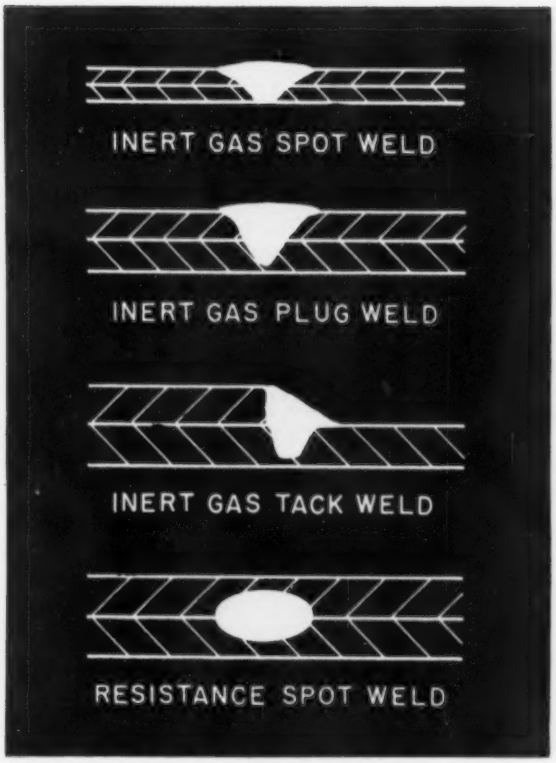
Improve Electrodes—The type of tungsten electrode used in Tig welding can improve or impair welding efficiency. Three types are available.

Pure tungsten electrodes give good arc stability with either balanced (transformers with capacitors) or continuous high-frequency alternating current. For best results, taper it when you're using alternating current with argon.

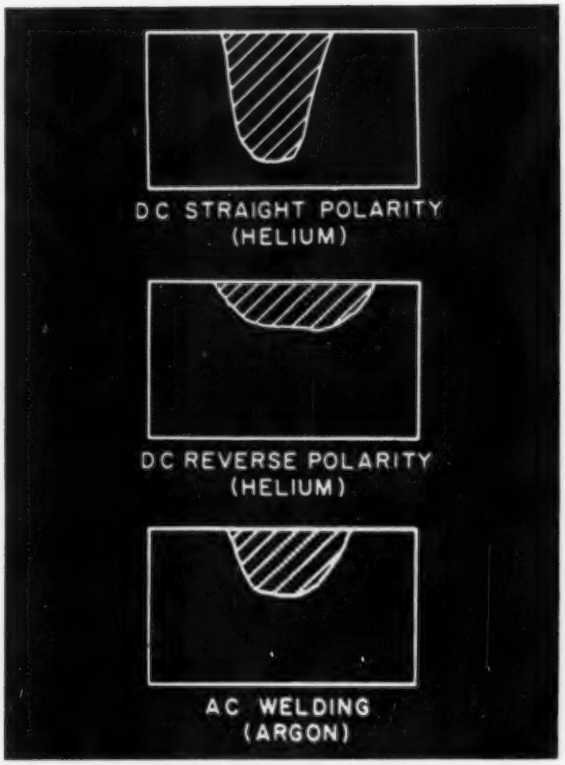
Thoriated tungsten electrodes can handle a wider current range, especially with direct current straight polarity and helium. They have no particular advantage over the pure tungsten type when welding with direct current reverse polarity or balanced alternating current. Because they are consumed mainly by volatilization, they leave fewer tungsten inclusions in the weld. They

Welding Show and Conference Facts

Place:	**Kiel Auditorium, St. Louis.**
Dates:	**Monday, April 14 through Friday, April 18.**
Show Hours:	**Tuesday, 12 noon to 10 pm; Wednesday, 10 am to 10 pm; Thursday, 10 am to 6 pm.**
Conference Hours:	**Monday, 2 pm to 4:30 pm; Tuesday and Wednesday, 9:30 am to 4:30 pm; Thursday and Friday, 9:30 am to 12 noon.**



FROM ONE SIDE: Spot welds made by Tags and Mags welding, compared here with resistance spot



EFFECTS OF CURRENT: Weld penetration and contour differ with type of current and shielding gas.

also make arc starting easier, both in the direct-current touch method and with high-frequency current.

Tungsten electrodes with an addition of zirconium have some advantages when using high-frequency alternating current for welding aluminum.

Mig Enters — Tig welding grew rapidly, but like all processes, it had its limitations. Researchers, promoters and users alike asked themselves, "What can be done to speed welding? Can costs be pulled down? Is it possible to eliminate tungsten inclusions?" The answer was simple, yet far reaching. Substitute a consumable metal filler rod for the tungsten electrode.

Production speeds on thick materials jumped upward. Costs tumbled. There were no tungsten inclusions. The engineering alloys presented new applications. And quite understandably, Mig welding, as this process was called, took over many jobs where Tig welding had done so well previously. In other cases, it went into direct competition with long established processes.

Opens New Fields — The Mig process was soon ready for broader development of new wire compositions. For the most part, compositions are about the same as those of the corresponding base metals, with allowance being made for burn-out at the arc. Filler wire may be either drawn or stranded.

Here's an interesting twist. Stranded wires serve as the ductile filler electrode where there's been a problem of depositing hard alloys. By using strands of copper, aluminum and iron in the proper proportions, the hardest of aluminum bronzes could be deposited. Other aluminum-bronze alloys and a leaded tin bronze have been deposited in this manner.

Extra filler metal can be fed into the arc in Mig welding by means of a cold wire attachment. This technique is particularly advantageous for build-up work and surfacing jobs where penetration and dilution must be kept low.

Direct Current Best—Most Mig welding is done with direct current reverse polarity. One process uses direct current straight polarity with a wire having an emissive coating. Also, emissive agents have been coated on filler wire for alternating-current welding to improve arc stability. This, however, has been confined to the lab.

An adaptation of Mig and Tig welding is the so-called spot welding process. Actually, the weld is a plug which melts one sheet and part of the underlying sheet, forming a weld nugget. This process lends itself very well to joining steel or stainless steel sheets up to ⅛-in. thickness to each other, or for weld-

BRONZE OVERLAY: Welder applies a layer of bronze metal inside a cylinder of SAE 4130 steel. Using the Mags process, stranded wire feeds through flexible tube to weld zone. Airco photo.

ing lighter gage sheets to much heavier base plate.

CO_2 Works Its Way In—Heretofore, gas-shielded arc welding, except for the atomic hydrogen process, had confined itself to the use of two inert gases to protect the weld zone—argon or helium, or a mixture of the two.

Researchers found that the chemically-active carbon dioxide could be paired with filler wire containing relatively high amounts of the deoxidants manganese, aluminum and silicon to produce sound, ductile welds in mild steel. The process started off with two major assets—high welding speed and low-cost shielding gas.

Thus far, the process has worked well on single-pass welding of most mild steels. In multipass work, it performs best on fully-killed steels and shows some impairment of weld quality on semi-killed and rimmed steels. Some of the trouble spots have been overcome by the use of flux.

Most Co_2 welding is done with direct current reverse polarity, but one process provides for a coated wire which enables the use of straight polarity. Special power sources are mandatory. The CO_2 arc, being somewhat unstable, requires high current density, a short arc, and the proper power source.

Has Limitations — CO_2 welding has not yet stepped beyond the bounds of mild steel. It has not given good results on low-alloy steels because the CO_2 oxidizes many of the alloying ingredients. With the stainless steels, carbon pick-up is a problem. For hard surfacing, its penetration is too deep for most jobs. And because oxygen is released in the arc, the process cannot be used for non-ferrous metals such as aluminum, copper, magnesium, nickel and others.

In spite of these limitations, efforts are still being made to dilute the costs of the relatively rarer helium and argon with low-cost CO_2. A start has been made in this direction by dual-gas shielding. An inner shield of argon is surrounded by an outer blanket of CO_2. The back-up gas is also CO_2.

Since CO_2 and hydrogen are not inert gases, the terms Tig and Mig welding no longer appropriately apply. These terms should give way to Tags for tungsten-arc gas-shielded processes, and Mags for the metal-arc gas-shielded processes.

Family Grows—An offspring of gas-shielded arc welding is a process by which many alloys can be cut as easily as an oxy-acetylene flame cuts through carbon steel. It's a big step forward in the preparation of many metals for welding.

Using a steel wire or tungsten electrode, and a suitable shielding gas, cuts of excellent quality can

be made in aluminum, brass, copper, aluminum bronze, magnesium, Inconel, Monel, nickel, chrome and stainless steels, titanium, and zirconium.

Cutting may be done manually or automatically. For manual operation, a power source with a drooping volt-ampere curve may be preferable. The Mags-type power sources are best for automatic cutting. About twice as much current is needed for cutting as opposed to welding.

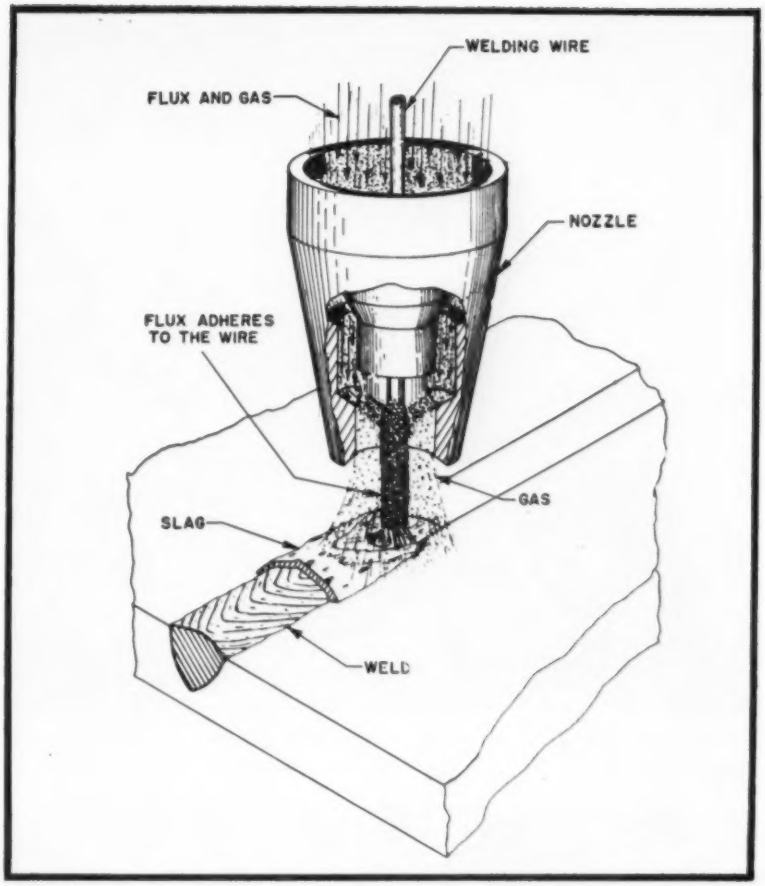
The recommended gas mixture for cutting aluminum is a 1-pct addition of oxygen to argon. Other metals that can be cut by this process also require argon, but the oxygen addition runs up to 20 pct. Gas flows are about 20 cfh. The tungsten arc process calls for an argon-hydrogen shield.

Other CO_2 Angles—In two CO_2 welding processes, flux is added to the gas stream. Since one of the chief objectives of the gas-shielded welding processes has been to eliminate the use of flux, why take a seemingly backward step?

In CO_2 welding, there's good reason. Although manual welding can be done, it takes a great deal of skill. Moreover, unless flux is used for rimmed and semi-killed steels, you're apt to have weld quality problems. Flux stabilizes the arc and deoxidizes the molten pool to improve soundness, decrease porosity and increase ductility.

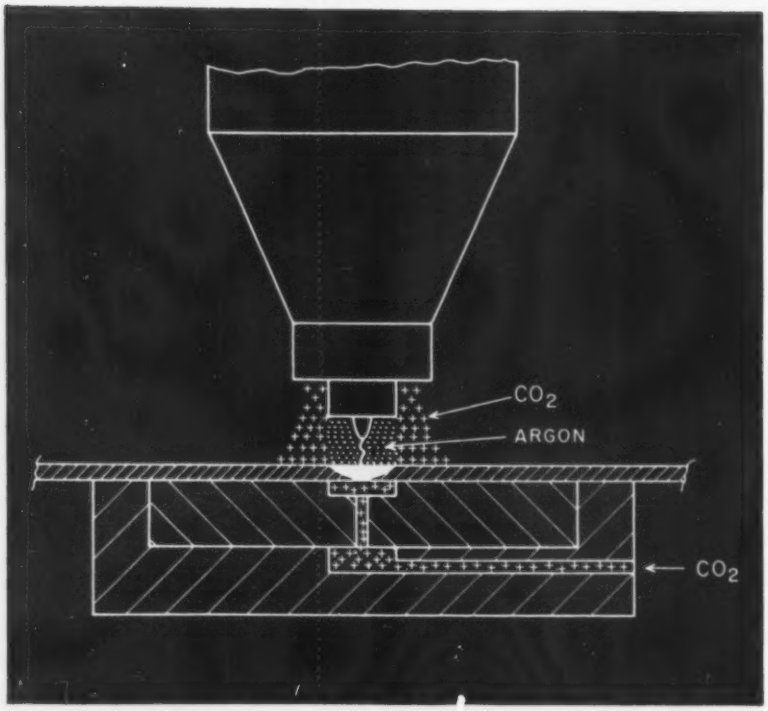
Meet the Gases—Eight different gases or gas mixtures are in more-or-less common usage. Of these, hydrogen is reducing. Five —helium, argon, helium-argon mixtures, helium or argon backed up by carbon dioxide, and nitrogen— are inert. The last two—argon-oxygen mixtures and carbon dioxide —are oxidizing.

Hydrogen, as used for the atomic hydrogen process, is diatomic. As it passes through the 11,000°F arc between two tungsten electrodes, the molecular hydrogen dissociates into atomic hydrogen and absorbs a great amount of heat. The atoms

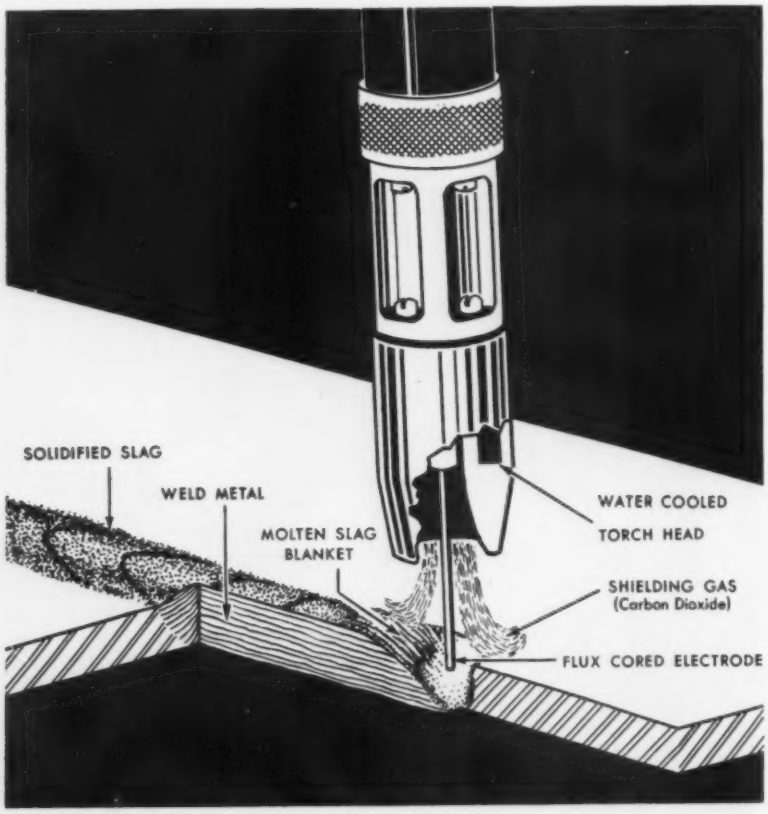


MAGNETIC FLUX: When flux is needed for welding with CO_2, it can be fed as shown here or by means of flux-filled wire core.

HOT AND COLD: To deposit more metal and keep the penetration within limits, one wire is fed into weld zone cold while other is hot.



DUAL SHIELD: To conserve argon, an outer blanket of CO_2 keeps surrounding air from weld zone. Backup gas is also CO_2.



FLUX IN CORE: For the more difficult welding jobs where CO_2 is used, a flux-cored wire makes welding easier and welds smoother.

reunite beyond the arc, giving up their heat for welding.

Flowing hydrogen effectively cools the electrodes and prevents them from melting. The hydrogen also keeps oxygen from the surrounding air away from the electrodes, the molten weld pool and adjacent metal, and protects them from oxidation.

Both helium and argon hold key spots in gas-shielded arc welding. As to which is better—well, it depends. Either can hold an edge over the other for a particular job. On the other hand, a mixture of the two may prove an excellent choice.

Get Hotter Arc—Helium has a hotter arc than argon with 40 pct more arc voltage per unit of arc length. This means deeper penetration, higher travel speeds, narrower heat-affected zones, and a bit more spatter. This larger spread on arc voltage doesn't affect the arc in automatic welding, but may make manual welding a little more difficult.

With direct current straight polarity and helium, you get a more stable and hotter arc. By mixing helium with argon and using balanced or continuous high-frequency alternating current, speeds and current densities go up and deeper peneration results. A mixture of 75 pct helium—25 pct argon has just about the same characteristics as straight argon on direct current straight polarity.

Good Oxide Cleaning—At low currents, argon makes arc starting easier. And because voltage changes so little with changes in arc length, any increases in arc length will help the operator to maintain his arc in manual welding.

As for oxide cleaning action on aluminum, argon is excellent when used with alternating current. Argon also performs very well with alternating current when welding dissimilar metals in overlays.

Choice of gas, then, is dictated by the job. The hotter arc associated with helium would have an

edge for welding materials of high heat conductivity, or where speed and penetration are important. Helium can also be used for automatic welding of thin materials where the constant arc length leads to practical arc stability. Frequently, argon is mixed with helium for better arc stability.

The more stable arc achieved with argon serves best for manual welding and on thin materials.

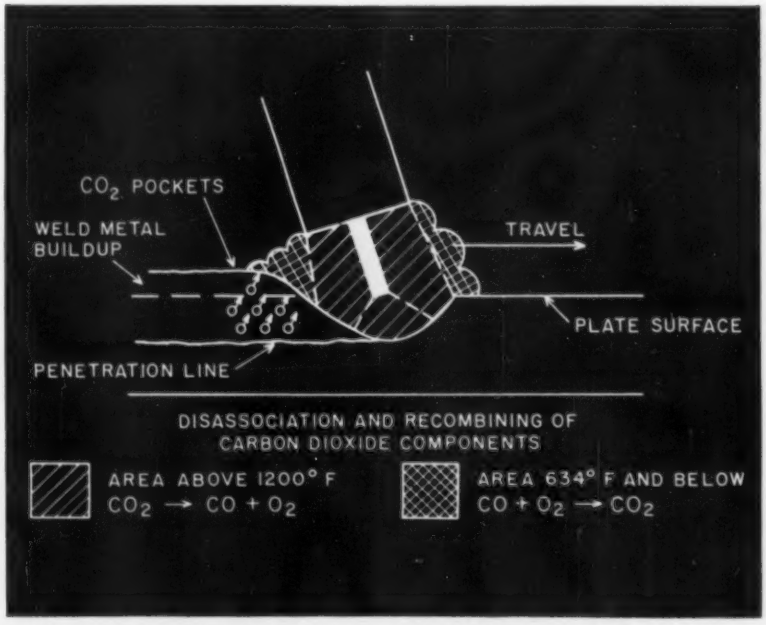
Add Oxygen—From 1 to 5 pct oxygen added to argon improves arc stability in welding alloy and stainless steels. One industry welding alloy steels showed, through plant practice, that straight argon was used two to one over argon-oxygen mixtures. In another case, a large oil refiner standardized on the 95 pct argon—5 pct oxygen mixture for welding stainless steels. As mentioned previously, 80 pct argon — 20 pct oxygen mixture works best for cutting metals other than aluminum.

Helium or argon backed by carbon dioxide has all the characteristics of welding with either gas alone. In this dual-gas arrangement, the helium or argon supports the arc stream while the carbon dioxide merely keeps the surrounding air away. Since the carbon dioxide does not reach the hot arc, it does not break down. But it does cut down on shielding gas expense—always a worthwhile objective.

How CO_2 Behaves—Within the hot welding arc, carbon dioxide becomes an oxidizing gas. It dissociates into carbon monoxide and oxygen at about 1200°F. This release of active oxygen occurs at the liquid metal region where it burns out carbon, manganese and silicon from mild steel. Away from the arc, and at a temperature of 634°F, the carbon monoxide and oxygen recombine to carbon dioxide.

Tempted by the low cost of carbon dioxide, and knowing that it is not an inert gas, researchers developed wires or added fluxes to

PASSES TEST: Weld made by automatic CO_2 welding is well formed. At present, process is limited to mild steel. A. O. Smith photo.



WHAT HAPPENS TO CO_2: When welding with CO_2 gas breaks down to carbon monoxide and oxygen. Later, it recombines back to CO_2.

replace the losses of carbon, manganese and silicon. At first, arc action was also erratic but short-arc techniques and suitable power sources tamed the spatter.

Nitrogen is a potentially useful shielding gas for welding copper. On copper, it compares very much in heat, penetration and spatter with carbon dioxide for mild steel. But it does need careful control, and must be dry and of high purity.

Use of Nitrogen—In the Tags process, thoriated tungsten electrodes are first choice. Use somewhat lower current than for helium or helium-argon mixtures. Gas flow rates of 10 to 20 cfh are enough.

As yet, no widespread use has been made of nitrogen for welding. Therefore, any unproven aspects of the process should be approached with caution. The cost-saving potential of nitrogen is such that there's a better than fair chance that experiments will be continued with the hope of working out suitable procedures.

Let's see how the gas-shielded arc processes have been coupled with their appropriate gases to fabricate the various metals and alloys. Looking at aluminum first, the Tags and Mags processes not only thrived on it, but grew to maturity because of their suitability for each other.

Balance Gas Costs — Helium, argon and helium-argon mixtures have been specified for aluminum. As to which is best must be decided by balancing arc stability, penetration, speed, oxide cleansing ability, bead contour and weld soundness with gas costs. Welding experts differ at this point on the relative merits of each gas or combination. This can mean one thing —that each has many jobs for which it is ideally suited.

Economy-wise, there seems to be a preference for Mags over Tags welding wherever either process may be used for aluminum. Welding speed is apt to be a little higher with helium than with argon. Moreover, when gas consumptions are equal, the costs favor helium or helium-argon over argon.

Just as the welding of aluminum has been freed from fluxing and flux cleaning, the use of inert gas has freed copper and its alloys from heat and cracking troubles. Before, oxy-acetylene welding was the usual way to make high quality welds. Now, the Mags process with helium shielding is the preferred method. By comparison, oxy-acetylene was slow and costly.

Get More Fluidity — Helium leads to a more fluid weld pool which materially aids fusion of the weld and base metals. With helium, you can weld with only two-thirds the amount of current needed for argon. Mixtures of helium and argon are used occasionally. Welding is done best in the flat position.

Silicon bronze, aluminum bronze, cupro-nickel and phosphor bronze may be welded by the inert gas process with gas preferences running (1) helium, (2) helium-argon, and (3) argon. However, helium does not hold the same advantage over argon as it does for copper.

For magnesium, the shielding gases, power sources and techniques are closely akin to those used for aluminum. Here, Tags and argon are more common than Mags and helium.

Sound, ductile and strong welds can be made by Tags or Mags welding in nickel, Monel, K-Monel, Inconel, Inconel-X, 70-30 Cu-Ni and Nimonic. The costs compare favorably with other welding processes. Tags welding takes the nod on ⅛-in. and thinner gages while Mags welding costs less on heavier sections.

Both Gases Do Job—Helium and argon are satisfactory for Tags welding of nickel and nickel alloys. In simple butt welding of light-gage sheet, the hotter helium yields better soundness. Pore-free joints in Monel, less fine porosity in nickel, together with about 40 pct higher welding speeds, spell out the advantages of helium over argon in this area. Where the welding current is less than 60 amp, argon is the only choice.

Mags welding of nickel leans toward argon. Helium added in amounts of 15 to 20 pct helps in welding solid nickel or overlaying nickel on steel.

Both argon and helium work well on titanium and zirconium and their alloys. Pure gases are essential. Oxygen, nitrogen, hydrogen and water vapor are evil forces on these alloys. As for quality, Tags welding in plastic enclosures may have some preference over the Mags process.

Big Field in Stainless—Stainless steels, along with aluminum, represents the biggest field for the inert gas-shielded processes. Weld quality is tops. Welding costs are good. And in light-gage work with food processing equipment, the lack of post-weld grinding and cleaning is a big asset.

Here, too, Tags and Mags welding apply. Argon, argon plus oxygen, argon-helium, and helium are all suitable.

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Resistance Welding Joins Swing to Automation

By R. H. Eshelman—
Engineering Editor

What are the important changes to look for in resistance welding? Here's a rundown for you.

This survey shows new ways to save with spot, projection, flash and seam techniques.

And there are some new twists to welding automation that will become increasingly important.

■ What's the future of resistance welding? Is its use on the upgrade? Is it levelling off or being replaced by other assembly methods? What areas of production will call for it? These are pertinent questions for all production men, not welding experts alone. For resistance welding has become the handy-man of production.

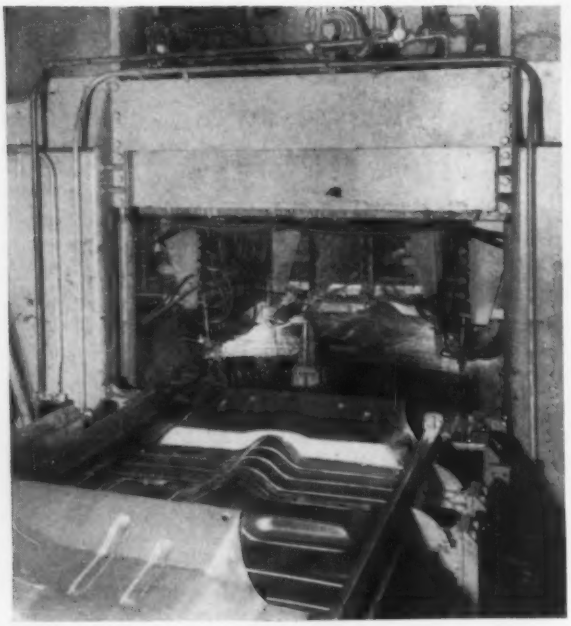
It provides a low cost means of joining sheet metal pieces in high volume quantities. John F. Cantalin, production engineer of General Motors' Fisher Body Div., says "it's probably one of the principal reasons the automobile industry has developed to the extent it has." He feels the future promises still greater advancement.

The aircraft industry's progress also owes a big debt to resistance welding, notably spot welding. This has made light metal fabrication possible in job lots of varying sizes. And despite rapidly changing concepts of aircraft design, spot welding is still going strong. Progress improvements such as slope control help it to keep pace.

Automation Ahead—Such versatility is bound to be rewarded. So it's no surprise that resistance welding is having another surge of popularity, one that parallels that of automation. Actually the two are teaming up more and more.

A big production advantage of resistance welding is its very short

CLEVER DESIGN: Engineering teamwork produced this unique push rod design (insert). It's made of two ball bearings projection welded to a length of low carbon steel tube in an automatic machine.



FAST WORK: Spotweld press with transfer mechanism assembles floor pans in less than a second.

PACKAGE ELECTRONICS: Resistance welders are using more plug-in controls to save down-time.

(almost instantaneous) weld time. According to Jules Cruchet, welding engineer of Ford Motor Company's manufacturing development group, this will tie resistance welding and automation even closer together. Engineers will couple short welding times with more automatic handling of parts for faster production and greater savings.

The reliability of resistance welding components has improved rapidly in recent years. Thus production engineers find they can move the process right into the conveyorized line. Tooling for automatic welding proves no more difficult than for many machining setups.

What Kind?—In body and sheet metal fabrication, automotive engineers make extensive use of multiple spot welding setups. The trend is to make them more and more automatic. With large parts, press-type welders, mechanical hands and gravity conveyors are favored. Transfer and handling generally is like that on typical automotive press lines.

Projection welding — another form of the resistance process— affords a means of joining unusual shapes. Engineers are giving it increasing attention. Like spot welding, it's well suited to automatic handling of parts in process. Moreover, the technique will accommodate heavier parts. Automotive frame assembly, tractor, and farm implement plants find these several features useful in many jobs.

Imagineering Pays Off—Projection welding also pays off for imaginative engineering in tooling and equipment. For instance, a fresh approach to push-rod production brings substantial returns on the Mercury engine—both in manufacturing costs and improved performance. The push-rod vendor, Bundy Tubing Co., Detroit, and National Electric Welding Machines Co., of Bay City, Mich., developed a machine that projection welds standard steel bearings on both ends of a piece of 1020 steel tubing.

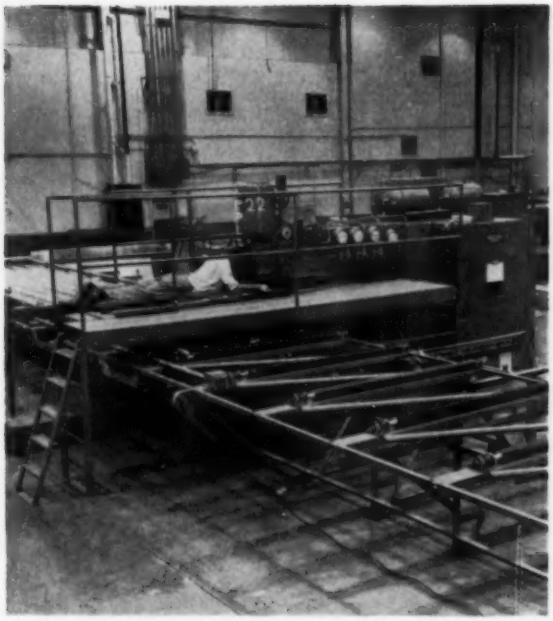
The machine demonstrates the current trend to automatic operation. Production is estimated at 2000 units per hour. Balls feed from dual hoppers and tubes come from a center magazine. Opposed welding heads are sequenced by motor-driven cams, getting weld pressure and follow up from an air bellows arrangement.

After welding, finished assemblies are automatically ejected into a chute, and fall into cartons for shipping. Process control is excellent; despite rigid quality checks no rejected rods have been returned to Bundy.

Mercury's product engineering group finds the new push rod has better wear resistance and improves engine performance because of lower inertia. The steel balls, with a fine micro-finish and a hardness around 60Rc, make an ideal bearing surface.

Integration No Problem — As part of the automation trend, resistance welding is being linked more frequently with machining and assembly operations. Perhaps this started with the automotive body. Portable spot welding guns moved into final body assembly areas some time ago.

One specialist in engineering these combination process lines is the Expert Tool and Die Co. of Detroit. The firm's engineers say



AUTOMATIC FEED: Automatic spotwelding of fuselage panels for jet planes can be tape controlled.

VINYL WELDING: Welding vinyl coated metals is done with a magnetic-force projection welder.

that the only practical and economical way to fabricate many complex parts or assemblies is with automated welding lines. They see an unlimited potential for these setups in specialized applications.

An example is the "L" shaped welding line they've engineered for assembling 500 automobile floor pans per hour. One feature of this 12 station unit is a feeder line for fabricating the underbody reinforcement. It feeds into the main line at right angles, delivering a finished reinforcement member for each pan stamping which is shuttle transferred down the main line.

A new ultimate in integrated lines is one for the electrical industry, expected to go into production of transformer cases soon. Engineered by National Electric Welding, it's designed to produce 60 complete cases per hour. Further, it can be changed over in just 10 minutes to any size case the plant is scheduled to turn out.

This nearly automatic factory will utilize submerged arc welding (MIG-Argon) and CO_2, in addition to spot, projection and seam welding. It combines stamping, roll forming, piercing, press forming and automatic testing with the welding operations.

Variety Sparks Growth—Because resistance welding takes so many forms, it appeals to a wide range of industries, including both small-lot manufacturers and mass producers. The list runs from aircraft to appliances, from toys to tractors, and includes sheet metal fabricators generally.

Applications vary from auto wheels spot welded by the millions annually, to fuel vessels for missiles which are flash-butt welded a few at a time.

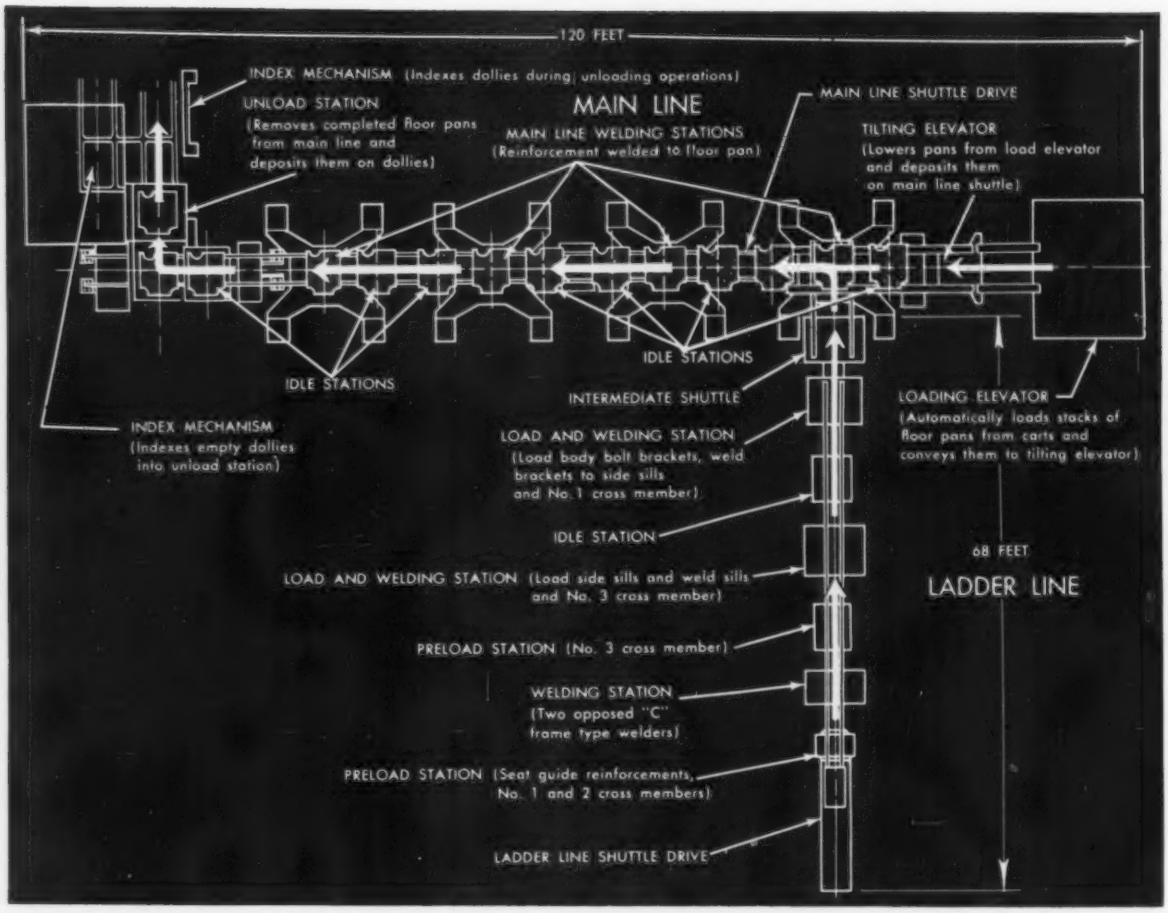
Cross-wire welding is one form of resistance welding that illustrates the economy and versatility of the basic process. Fence manufacturers use it to turn out 200 ft of wire mesh fabric a minute, joining 22 crossed wires at a time. Parts suppliers use it for seat frames. Appliance people use it for making large numbers of wire baskets and similar parts.

Mash seam welding is still another form which helps some auto body fabricators to big materials savings. By welding roof extensions on bodies they avoid the cost of premium-width sheets of steel. The surface of the mash seam is easily finished so that the joint is invisible on the outside.

Weld Vinyl — Another recent development also makes it possible to weld vinyl coated metals. The projection welding machine used for the purpose is of the magnetic force type. Welds of good shear strength can be consistently obtained, but there must be good quality control of the parts, with good fit especially important.

Variations in types of vinyl coatings create many problems. Their magnitude is explained by the fact that one side of a 20 gage sheet must be hot enough to melt while the other should be held to the temperature of boiling water. Magnetic force synchronizes the impact pressure precisely with the heat cycle to provide a strong weld.

More Standardization—Another reason for the popularity of resistance welding is the trend to standardized equipment and the use of packaged electronics. Big users, such as the appliance and auto-


120 FEET
INDEX MECHANISM (Indexes dollies during unloading operations)
UNLOAD STATION
(Removes completed floor pans from main line and deposits them on dollies)
MAIN LINE
MAIN LINE WELDING STATIONS
(Reinforcement welded to floor pan)
MAIN LINE SHUTTLE DRIVE
TILTING ELEVATOR
(Lowers pans from load elevator and deposits them on main line shuttle)
IDLE STATIONS
IDLE STATIONS
INTERMEDIATE SHUTTLE
LOADING ELEVATOR
(Automatically loads stacks of floor pans from carts and conveys them to tilting elevator)
INDEX MECHANISM
(Indexes empty dollies into unload station)
LOAD AND WELDING STATION
(Load body bolt brackets, weld brackets to side sills and No. 1 cross member)
IDLE STATION
68 FEET
LOAD AND WELDING STATION (Load side sills and weld sills and No. 3 cross member)
LADDER LINE
PRELOAD STATION (No. 3 cross member)
WELDING STATION
(Two opposed "C" frame type welders)
PRELOAD STATION (Seat guide reinforcements, No. 1 and 2 cross members)
LADDER LINE SHUTTLE DRIVE

WELDING AUTOMATION: Flexible spotwelding layout has a right-angled subassembly line.

motive industries, are stimulating this trend. As Ford engineers put it: "We can reduce our down time wherever we can replace conventional wiring and controls with plug-in units."

A term that's frequently heard in manufacturing circles is "performance standardization." This concept is similar to the NEMA code for electric motors. Regardless of the design and construction differences inside various units, you expect them to be interchangeable in terms of outside mounting dimensions and function. Electrodes and transformers are two oft-mentioned items in the welding field where this idea applies.

What's Ahead—Resistance welding engineers acknowledge some challenges facing them in the immediate future. Supersonic aircraft and space vehicles pose welding problems with high temperature alloys of titanium, steel and stainless.

A major method of fabrication in this field is expected to be thin skins stabilized by a core to make a structural sandwich. Resistance welding is a low-cost way to producing these sandwich skins and cores in quantity, also to fasten such assemblies structurally.

In the automotive field, focus of attention on the unitized body may bring more resistance welding problems.

William J. Farrell, chief application engineer of Sciaky Bros., Inc., sums up the situation this way: "While automotive manufacturers pioneered low cost production aspects of resistance welding, they now must add its structural integrity to the high production advantage. Meanwhile airframe and missile manufacturers have demanded the structural integrity of the process. Now, both industries come full circle in their demand for the resistance welding advantage historically enjoyed by the other."

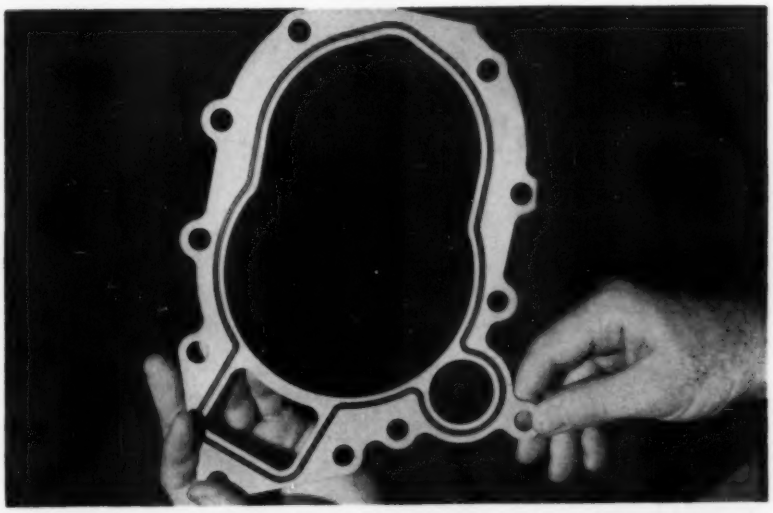
The answer in both cases depends on proper use of resistance welding. Highly developed equipment and techniques offer practical solutions to many shop problems. All it takes is cooperation between design and production engineers.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Elastomer Seals Hot Fluids

Designers have been stumped when they've had to provide seals for high-temperature use. No rubber could stand both fluids and heat at the same time.

Now a new synthetic is boosting the temperature barrier.



MOLDED IN PLACE: Designed for 200-psi service with jet fuels, this "Viton" gasket withstands temperatures ranging from —60° to 350°F.

▪ Supersonic aircraft and missiles are tough on rubber. Whether the heat comes from jet engines or from high skin temperatures, it's destructive to rubber parts, especially those in contact with fluids.

There are elastomers that will withstand the heat, but they fail in service with fluids. And the elastomers that can handle the fluids until now have not had the heat resistance.

To get resistance to liquids at temperatures over 400°F, E. I. du Pont de Nemours and Co., Inc. has developed a new fluorine-containing elastomer. Called Viton, the synthetic rubber is a linear copolymer of vinylidene fluoride and hexafluoropropylene, 65 pct flourine by weight.

Fills a Need—For development and evaluation, pilot plant production was sufficient. But with the immediate acceptance of Viton by design engineers, particularly for aircraft applications, du Pont has built a full-scale commercial plant to go into operation this month.

As supplied to rubber manufacturers, the material is a white translucent product with viscosity and plasticity in the same range as present elastomers. Standard rubber processing equipment turns out extrusions and moldings without special procedures.

When Viton is exposed to dry heat and tested to failure, the cause of failure is embrittlement. Tensile strength is largely unaffected. Though useful life is outstanding, the important additional property is resistance to functional fluids.

Wide Service — Vulcanizates of Viton can serve in fluids where no other elastomer survives. In immersion tests, Viton withstands a wide variety of solvents, fuels, lubricants, hydraulic fluids, acids, and bases with good retention of properties and low volume increase.

At room temperature tensile strength ranges from 2000-3000 psi with elongation from 100-400 pct, depending on hardness. The vulcanizates can be made in any hardness from 60 to 90 durometer.

With test specimens heated to 300°F, tensiles run 300-1000 psi and elongations 80-200 pct. Despite reduction of tensile and elongation, it's a reversible effect and not related to deterioration by continued exposure to heat.

Choice for Seals—For gasket material at high temperatures, Viton has good resistance to compression set. Specimens compressed to 25 pct and held for 70 hours at 250°F recover to within 90 to 97 pct of original dimension.

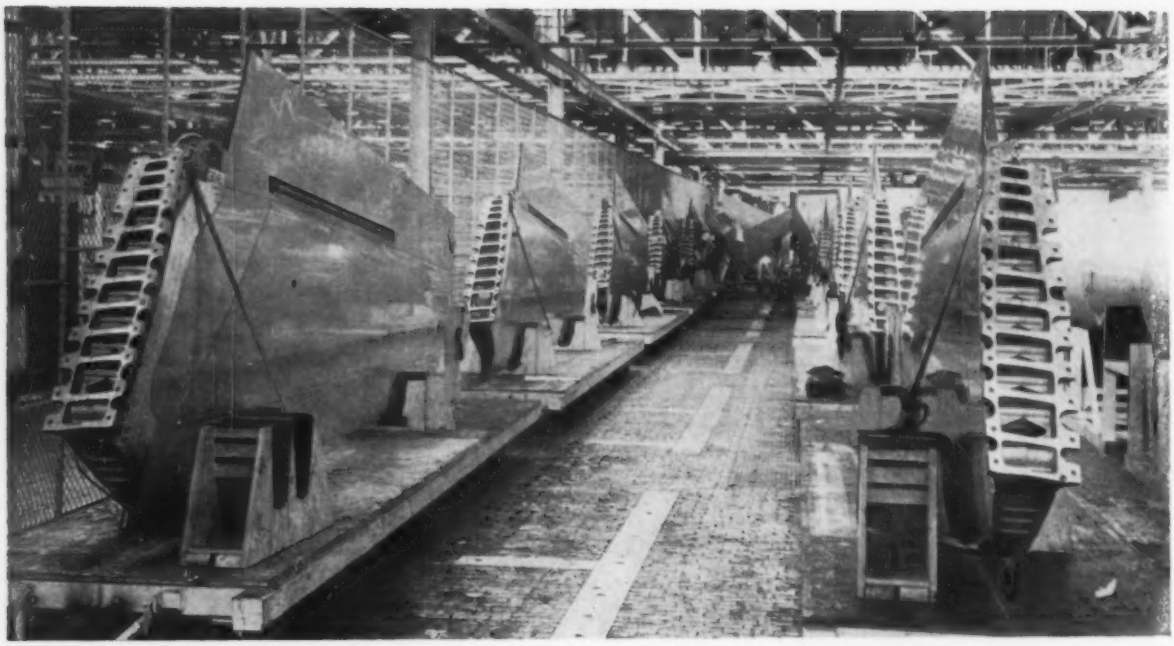
Widest application has been on seals for military aircraft and missiles. In one engine, the liner seal near the rear of the engine must stand 500°F immersed in Mil-L-7808 lubricant. Only Viton can take this service.

Since the uncured synthetic dissolves in ketone - type solvents, caulks and coatings can be prepared. Viton can be easily applied to fabric, bladder-type fuel cells being one application.

Already on it's way to many industrial uses Viton is serving as valve stem seals for truck motors at 350°F or more. It's expected that commercial applications will out-strip military uses in the near future.

Test Heat Resistance

Service Temperature, °F	Aging Time, hours to brittleness
400	2400+
450	1000
500	300
550	100
600	24



QUALITY OUTPUT: It takes a combination of tricks to build honeycomb wings of the Matador Missile.

Learn to Work Sheet Metal The Low-Cost Way

When you're forced to work metals at low volume pace, the price can come high. And demands for precision can jack the price even more.

The search for better methods leads to bold departure from established processes.

▪ Low volume and short production runs plague the aircraft industry. For sheet metal parts that must be interchangeable, tooling costs can be prohibitive.

At The Martin Co., Baltimore, it has led to the development of processing machinery and techniques to do away with costly tooling and piecemeal assembly of airframe structures. Adolph Vlcek, Jr., Manager of Martin's Manufacturing Engineering and Research, reports improved quality and increased output at lower cost.

Advanced Forming—One of the first departures from tradition at Martin was stretch forming. Such a process makes it possible to stretch wrap sheet metal on longerons, stringers and circular frame members.

Another advance came with the Guerin trapped rubber forming. When the ram descends, the sheet and tool are impressed into a rubber head. The rubber head, confined in a steel frame, serves as the lower half of a conventional die. Any flanges extending beyond the outline of the tool, including offsets or areas to be formed, are pressed around and into the tool.

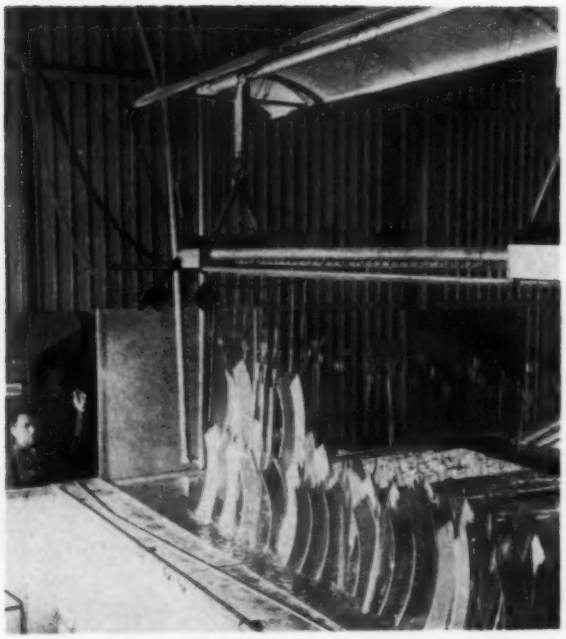
With only the punch portion required, the close machinery normally associated with die sets is eliminated. Even so there's some hand finishing needed to iron out wrinkles and seating offsets.

Refine With Hydraulics—Efforts to cut hand work resulted in Marform, a refinement of the Guerin process. A hydraulic pressure pad controls the flow of material over the tool to produce finish formed parts that previously could only be made with complex steel draw dies.

It reduces hand finishing by more than 65 pct. Other variations of this forming principle are Hy-draw and Hydroforming.

Drop and Yoder hammers continue to be used for forming complex shaped parts. The drop hammer is suited to the forming of elbows, exhaust stacks, shrouds and other complex contours. Yoder hammers, often used for prototype forming of large compound curved

READY FOR BRAZE: Honeycomb structure calls for brazed joints to withstand rugged service.



FREE FALL QUENCH: Lack of distortion is main advantage over the basket-type quench.

sheets or skins, are also used to correct minor discrepancies in parts formed by other methods.

Several Versions—Bulge forming adapts to larger cylindrical or circular sections such as engine nacelles. The different versions of the method use hydraulically expanding dies, compressed rubber, and recently, explosives.

While metal spinning is being used to some extent, power roll forming is taking its place.

Tubing is processed on standard equipment for such operations as bending, flaring, swaging and beading. Heated tools perform these same operations on high-strength materials.

Recent aircraft designs call for parts of high-strength materials, such as titanium, zirconium and hot-work die steels in the 260,000 to 280,000 psi range. Here elevated temperature forming and shaping is used.

Choice in Blanking—While routing and sawing serves normal production, sheet metal blanks in sufficient volume are made with pierce-blank template type dies. Punch and die sets and special steel rule dies are used on higher tensile materials such as titanium and stainless steel alloys.

For drilling, parts are stacked to various heights depending on material types, gages, and drill run-out allowances. Pilot holes are drilled from bushings in adapters on the spindle and are piloted into bushingless templates. Matched and tooling holes are drilled from bushings mounted in drill templates.

Parts with severe contours and sharp bend radii are usually made of annealed aluminum and call for heat treatment and hand finishing. Most other aluminum sheet metal parts are made from fully heat-treated material.

Fast Quench — Where the salt bath or solution heat-treat method is used, Martin has discarded the basket-type quench because of distortion. In its place is a more effective quenching system known as Free Fall.

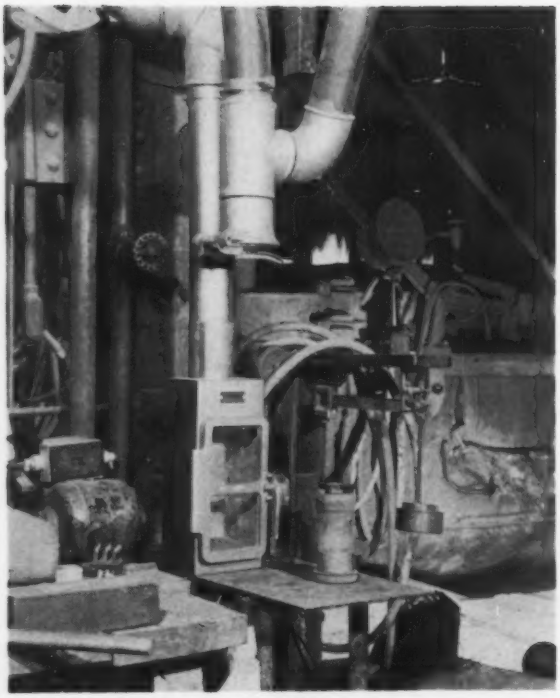
Instead of loading the parts in a basket, the parts are hung on the hooks of a rack. After removal of the parts from the salt bath, a quick release mechanism allows the parts to fall freely into the quench. It results in a faster, more uniform quench.

For high strength-to-weight ratio sandwich materials, adhesive bonding, brazing and cold welding are being added to riveting and fusion welding as standard methods of joining.

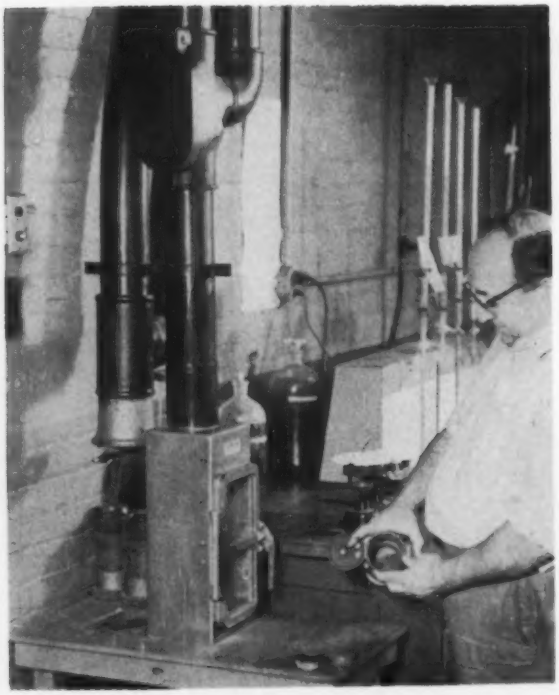
Need Joining Study—Where operational temperatures are high, brazed-type structures are replacing adhesive bonded honeycomb. But future models, presently in the predesign stage, indicate that brazing is only an interim method of metal joining.

Resistance welding is being further developed. One of the problems to overcome is the welding of thick cover skins to relatively thin core materials without increasing the notch sensitivity.

As high-speed missiles and space vehicles demand new materials, sheet fabrication must keep up with the challenge. New sheet materials capable of retaining their full strength and anti-erosion characteristics will require changes in sheet metal processing.



SPEEDY SERVANT: To save time, pneumatic tube terminal in melt shop is close to waiting furnaces.



READY FOR TEST: In the laboratory, sample disks are removed from tube carriers and analyzed quickly.

Delivery by Pneumatic Tubes Speeds Foundry Tests

Steel foundries want a fast answer from the lab when a heat seems ready to pour.

Speeding melt samples to the lab in pneumatic tubes is one way to avoid costly delays.

▪ Modern steel making emphasizes two things: (1) Faster production. (2) Careful control of quality. Taken together these two factors call for quick and accurate laboratory analysis of alloy composition, especially during the melting phase.

To meet this demand, many firms have modernized their laboratory techniques. The Adirondack Steel Castings Co., Watervliet, N. Y., is a case in point.

The firm's steel castings cover a wide range of alloy and stainless grades. At one point, efforts to speed production were hampered seriously; actual lab analysis took from 30 to 45 minutes; while carrying a sample 1000 ft from the melt shop to the lab and returning the test result often took another 30 minutes.

Buys New Equipment—The solution to this problem involved two steps. One was to install modern equipment for spectrographic analysis; the other was to install a two-tube pneumatic system, made by the Lamson Corp., Syracuse, N. Y., for carrying samples and laboratory results.

Telephone poles and a crane bridge support the Airtube system above ground between the melt shop and the lab. Outside air is used in the tubes to prevent condensation and freezing in winter weather.

Carriers for the tubes are 6 in. long and 2¾ in. ID. Sample disks measure from 1¾ to 2 in. OD and are ½ in. thick. They are cut from slugs poured for this purpose in either the melt shop or the foundry.

A one-way trip for either a sample or a test result in an Airtube carrier takes just 45 seconds. Thus it now takes only about 12 minutes for a complete analysis, including travel time.

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Rust Veto 377, for long term indoor storage

Do you know, for instance, about Houghton Rust Veto 377, the polar type rust preventive which displaces water, and can therefore be used for long term indoor protection or shed storage even though the material to be stored may have previously been exposed to moisture. It can be applied at temperatures down to -50°F. Its soft, thin (.0005") film withstands a 30-day humidity cabinet test, yet is readily removed by solvents.

Rust Veto 266, for "between operations"

Another Rust Veto which has won the praise of companies everywhere is Houghton Rust Veto 266. It is

fighting rust

a low cost combination rust preventive, cleaner and fingerprint neutralizer. Used in "between operations" protection of manufactured parts, it lowers rejects caused by corrosion because it so effectively displaces water, perspiration and acids from work which has been handled. Many companies also use it for protection of parts or products during shipment. It is a slush type preventive, easily removed with solvents.

Information for the asking

Check the list at right against your own rust preventive needs. Then write for specific information. And be sure to ask for a free copy of Houghton's new bulletin on the latest developments in rust preventives, "Rust Prevention by Houghton". Also available, complete information on government rust preventive specifications. Write to E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

Houghton's Industrial Rust Preventive *Checklist*

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Rapidly drying, easily removable dark solvent solution, produces a dry, .003" asphaltic type of film, which can be handled after 4 hours drying time . . . **RUST VETO 344.**

☐ **Protecting Electrical Circuits**
Clear, non-toxic, synthetic resin varnish, leaves a dry and non-removable film about .002" thick which resists water, gasoline, salt water, heat and outdoor exposure . . . **RUST VETO 110-D.**

☐ **Indoor Protection**
Used for highly finished parts, such as tools, dies, gauges, etc., stored or wrapped for shipment. Available in spray cans . . . . . **RUST VETO A-2.**

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You Arbitrate It!

A CASE OF KINDNESS

From the files of
The American Arbitration Association

Amos T., a milling machine operator in a shop manufacturing laundry equipment, was ambitious to get ahead. He kept asking the personnel manager for reassignment to the next higher classification. But there didn't seem to be any openings for him. Finally, with other shops in town advertising for machine shop help and promising all sorts of benefits, Amos decided to quit and take another job.

He handed in his resignation, went through all the "exit interview" processing in accordance with the company's procedure, turned in his tools, and drew his final pay check. About a week later, however, a new job opened up and management sent for Amos to see whether he'd like to come back.

"You see, it's this way," explained the personnel manager. "You've been out of the shop a week, but our final processing isn't completely finished. You're still covered by group insurance, your records are still in the active file, and it would be a simple matter to reinstate you just as if nothing happened, except that you don't get paid for the week you were out. So if you want the job you've had your eye on you can have it now."

Takes the Offer—Amos thought it over a few minutes and decided to take the offer. The men were all glad to see Amos back, but the next time a seniority roster was posted by the company there was a protest. Amos was given his original seniority date. This placed him ahead of several men who thought he should have been regarded as a new employee. A grievance was filed, which eventually went to arbitration.

The issue revolved around interpretation of the union contract clause which read: "Seniority shall be broken if an employee quits, if he fails to report for work within five working days after having been asked to do so, if he is discharged for cause or if he overstays a leave of absence or vacation without obtaining permission from the company."

(Continued on following page)

The company defended Amos' seniority rights. "That provision of the contract doesn't apply here because the final termination had not yet gone through," argued the personnel manager. "To all intents and purposes, Amos had a one-week leave of absence, which didn't interrupt his original seniority."

Says He Quit — The employee who filed the grievance didn't see it that way. "Amos officially quit and was out of the shop for a week," he said. "That's all that matters. If the company wants to take their time about closing out the records, that's their business, but that doesn't mean a man can come back any time and take a place ahead of me on the roster. What if the company wanted to keep records open for a year?"

After all the arguments were concluded, the hearing was declared closed and the arbitrator retired to make his award.

The Arbitrator Ruled:

"It seems to the arbitrator that the language of the contract is clear and unambiguous on this point and is controlling. It says that if an employee quits, his seniority shall be broken. The pertinent language is unqualified and does not require company review or approval. A quit is a voluntary act on the part of the employee involving a permanent termination of employment. The procedural steps in processing a quit, which may involve personnel review and termination interview, does not alter the fact of the resignation by the employee. While the company through the termination interview or other means may persuade the employee to change his mind, the fact that he voluntarily quit and the termination papers were prepared accordingly, makes him subject to the language of the contract."

Caution: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.

BEFORE...
Appliance manufacturer installed leg leveling bolt; used square head fastener in crating.
AFTER...
Circle B leg leveling bolt designed with Phillips head, at no extra cost, now does both jobs.

save dollars

with this sense-making idea

LITERALLY thousands of dollars can be saved through the practical application of basic bolt making principles in designing and specifying fasteners.

In the actual case shown, savings were pyramided through reduced inventory, handling, purchasing and production time; while one part was eliminated entirely.

To make this basic information available, Buffalo Bolt Company has drawn on over 100 years of experience to put together a digest of these principles.

You'll find them in our new booklet, "How to specify fasteners . . . and save". Filled with drawings and charts, it makes a handy guide in designing or buying any headed parts.

If you can use a copy, write to North Tonawanda or ask a Field Representative.

BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation

North Tonawanda, N. Y. • Princeton, Illinois

MAKING BOTH FASTENERS AND FRIENDS FOR 100 YEARS

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WONDERING ABOUT PRESS AUTOMATION?

Maybe you've been thinking press automation isn't for your plant. Too big—too costly! Fact is, that's a pretty commonly held attitude concerning automated presses.

Perhaps you have said, "We can't automate our press manufacturing setup. We have to change jobs too frequently. We'd have a problem of galloping obsolescence."

This was the way the man with the press models above felt about automation. But now his is more of a problem of selecting the *type* of press automation that's best for his shop. You see, he's already found out some startling things concerning improved manufacturing methods with power presses. He read about these things in a new book just released by Clearing Machine Corporation. It's the book discussed on the opposite page.

CMC

CLEARING PRESSES

the way to efficient mass production

CLEARING MACHINE CORPORATION—*division of U.S. INDUSTRIES, INC.*

6499 W. 65th Street • Chicago 38, Illinois / Hamilton Plant • Hamilton, Ohio

TECHNICAL BRIEFS

Handling

Bins of metal parts double as tote storage boxes

Wirebound pallet bins that weigh only 31¾ lb are packed with up to 1500 lb of airplane brake segments by Alpha Industries Inc., Logansport, Ind., as part of a customer's materials handling standardization program.

The bins are identical to those used by other suppliers of small parts to Bendix Aviation Corp.,

Packer places fresh-from-bath pieces into a wirebound bin.

South Bend, Ind. After being emptied, the company uses them as tote boxes or for small parts storage.

Both Plants Save—The supplier of the bins says their use results in important economies at its own as well as at the receiver's plant.

Ready-to-ship brake segments are packed directly into the open-top bins at final work stations in predetermined patterns; each container carries a maximum permissible load.

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 119. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

When a bin is full, a fork-lift truck carries it away. An empty bin to be packed replaces it.

Each bin consists of a strong built-up skid base. To each is attached a one-piece wirebound blank folded around it to form the four sides. It's closed with wire-loop fasteners; nails hold it to the base. Despite its relative light weight, the wire-bound pallet bin has proved to be very resistant to damage from shipping and handling shocks and jars.

Stops Scratching—Airplane brake segments are precisely machined and polished. Then, they are dipped into an anti-corrosive wash prior to packing. Parts must be protected against scratching and nicking. Damage sometimes resulted when formerly used bins simply fell apart and spilled their contents because of the weight of their loads.

Finishing

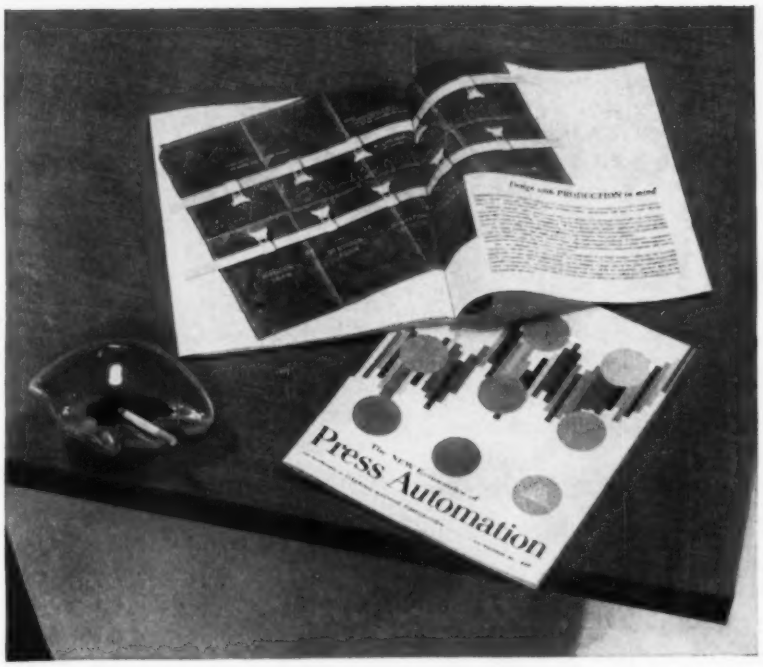
Centerless grinder holds tolerances

Core sections of motor shafts must be consistent in size. One electric motor maker uses a centerless belt grinder to hold its tolerance and runout specifications. Shafts worked vary in length from 16 to 26 in. and 1 to 1¾ in. diam. They're ground to ±0.001-in. with a total indicator reading of 0.0005 in.

Westinghouse Electric Corp., Sunnyvale, Calif., grinds 125 of the 1-in. shafts per hour with an operator and helper running a centerless belt grinder. A product of Engelburg-Huller Co., Syracuse, N. Y., this machine not only maintains required tolerances, but produces a finish of 125 microinches.

Cleans Belt—The abrasive belt is 4 x 54 in. with 40-grit aluminum oxide. It's furnished by Behr-Manning Co., Troy, N. Y. Coolant flushes the belt, keeping the grit fully exposed for effective cutting.

A rubber covered contact wheel backs the belt and drives it at a speed of 5000 sfpm.



THEN WRITE FOR THIS BOOK!

There are many ways to automate production with power presses. Sure, some automated setups are big and costly. However, you have to reckon their cost in terms of the volume of work that's accomplished. Other automated presses, or press lines, are relatively inexpensive. Clearing engineers can show you how a group of low cost inclinable presses can be turned into an automatic production unit. You will see how a job stamping shop is using a transfer press. And you know how versatile a press has to be to turn out work for a job shop!

Where can you see these things? Well, the problems of automating press production are discussed frankly in a recently published book—"The New Economics of Press Automation"—the book shown above. It's a big book with some big ideas in it. If you are a manufacturing executive, you ought to have a copy of this book. We'll be glad to send you a free copy. Just write Clearing.

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the way to efficient mass production

CLEARING MACHINE CORPORATION—*division of* **U.S. INDUSTRIES, INC.**

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FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 119.

Welding

A company publication contains information on uses of aluminum bronze electrodes and filler rods. (Ampco Metal, Inc.)

For free copy circle No. 1 on postcard, p. 119

Rivet-Nuts

Designed for fast arbor press installation are new one-piece "rivet-nuts" announced in a bulletin. Actually one-piece blind rivets with internal threads, they provide multiple nut plate or combination riveted and nut plate assembly in one easy operation. (B. F. Goodrich Aviation Products).

For free copy circle No. 2 on postcard, p. 119

Precision Balls

Relative corrosion resistance properties of various ball materials under extreme temperatures and varied chemical exposures appear in a handy chart. Materials include: stainless 302, 316 and 440, bronze, K - Monel, aluminum, beryllium, copper, nylon, Teflon and Pyrex glass. (Hartford Steel Ball Co., Inc.)

For free copy circle No. 3 on postcard, p. 119

Tantalum Capacitors

Tantalum capacitors for use where exceptional shock and vibration resistance is required are covered in a 4-page folder. (Fansteel Metallurgical Corp.)

For free copy circle No. 4 on postcard, p. 119

Vacuum-melted Alloy

Excellent strength - to - weight properties are reported in a bulletin for a new vacuum-melted alloy. The precipitation hardening iron-based alloy is especially effective at 1300 to 1350°F. It comes in forgings or bar stocks. (Metallurgical Products Dept., General Electric Co.)

For free copy circle No. 5 on postcard, p. 119

Vacuum Metalizing

Vacuum metalizing (vacuum plating) is described in a brochure as a clean, low cost production technique whose use is rapidly growing as a metal-finishing process for a wide variety of products. Without buffing or polishing, it gives a bright finish on practically any base material. (F. J. Stokes Corp.)

For free copy circle No. 6 on postcard, p. 119

Locking Screws

Self-locking socket screws reviewed in a bulletin come in microsizes. Employing a nylon lock pellet seated into their thread areas, the tiny fasteners hold tight, resisting shock and vibration. In alloy steel or 18-8 stainless grades, they come in microsizes No. 0 through No. 3. (Standard Pressed Steel Co.)

For free copy circle No. 7 on postcard, p. 119

Rare Earths

Metallurgical uses of rare earths are discussed in a 46-page abstract

PUNCHES · DIES · RIVET SETS
COMPRESSION RIVETER DIES

Made to highest standard and uniform quality thus insuring maximum service.

Since 1903

Rivet sets—round, square, oblong Punches, and Dies carried in stock.

Write Dept. B for catalog 54 and new stock list.

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publication. Abstracts cover 10 years of research and preparation on both ferrous and nonferrous applications. (For free copy write on company letterhead to Davidson Chemical Co., P. O. Box 488, Pompton Plains, N. J.)

Cooled Metals

Refrigeration, points out a brochure, can add new efficiency to your metalworking operations. It describes a cooling system designed to improve machining, tapping, drilling, grinding and metal drawing jobs. (Precise Products Corp.)

For free copy circle No. 8 on postcard, p. 119

Closed-circuit TV

Closed-circuit television systems illustrated in a 6-page folder let viewers watch dangerous or difficult to see industrial processes. Small and compact, the units are extremely versatile. (Insul-8-Corp.)

For free copy circle No. 9 on postcard, p. 119

Plant Location

Looking for a spot for your new West Coast plant? If so, a folder describing a new California industrial park may interest you. It supplies comprehensive details on the deep water port planned industrial community. (Port of Stockton Industrial Park.)

For free copy circle No. 10 on postcard, p. 119

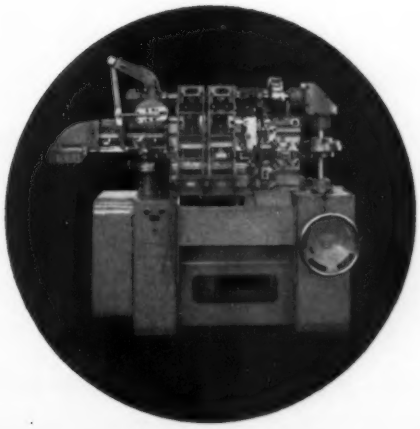
Test Furnaces

Tensile, creep and stress-rupture tests on steels and alloys can be made with accuracy and comparative ease in a new line of high-temperature electric furnaces. A brochure describes them. (Marshall Products Co.)

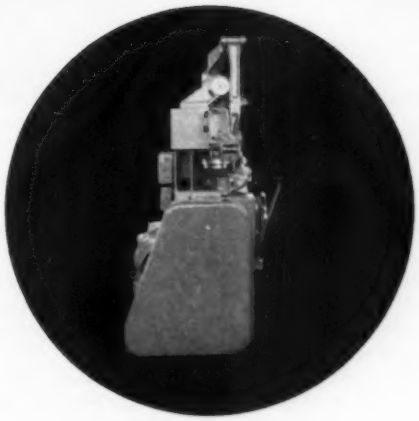
For free copy circle No. 11 on postcard, p. 119

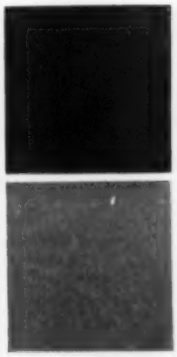
Aircraft Steels

Aircraft steels are listed and specifications given for them in a 1958 revised edition of a popular booklet. In its 72 pages, it contains: (1) military and government specifications data; (2) a list of aircraft quality alloy and stainless steels ready for immediate ship-



VERTICALITY = SETUP TIME / 2





The big story of the important new line of Torrington vertical 4-slides is savings:

Upward of 50 percent savings in setup time, tooling costs and floor space!

On a strict cost-accounting basis, you cannot afford not to investigate the profitability of replacement with the Torrington "Vertical Line" in the cost-critical field of wire and strip forming production equipment. Full data—or a demonstration—upon request.

THE TORRINGTON MANUFACTURING COMPANY

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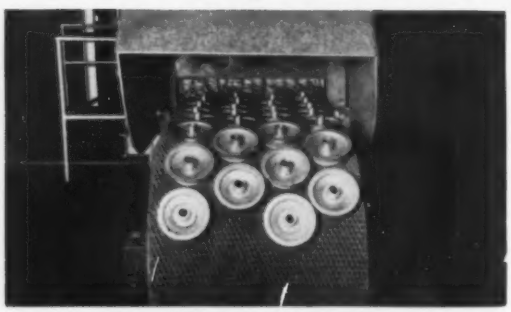
THE ELECTRIC FURNACE CO. Salem, Ohio. EF Gas Fired, Oil Fired and Electric Furnaces.

EF Brazing FURNACES

cut material, tooling and finishing costs

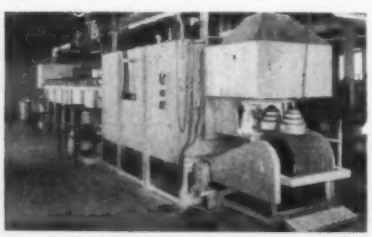


EF Brazing Furnaces assure utmost efficiency and economy, brazing large or small, steel, aluminum and non-ferrous assemblies.

When it's costly to make a part in one piece—make it from several pieces, brazed together. Brazing can save from 50% to 80% in material costs. The brazed piece will probably weigh less—be stronger—withstand shock and vibration better, and wear longer.

Brazing enables you to avoid costly die and tooling charges—and since the finished pieces are discharged from the furnace uniformly bright, smooth and free from scale—plating, lacquering, painting or other finishing costs are greatly reduced.

For best results, let EF engineers, with their wide experience, work with you on your next brazing job. Descriptive folders including many suggested "do's and don'ts" sent promptly on request.



EF Continuous Mesh Belt Conveyor Furnaces are used extensively for brazing, bright annealing, drawing and other heat processing. The material is loaded directly on the woven wire belt, uniformly processed and discharged automatically.

This EF Roller Hearth Furnace brazes large steel assemblies which emerge as integral units —scale-free, bright, and undistorted—ready for use. Similar furnaces handle brass, aluminum, copper and other ferrous and nonferrous products.

EF

BULLETIN No. 461
shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.
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THE ELECTRIC FURNACE CO.
GAS FIRED, OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION *Salem - Ohio*
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FREE LITERATURE

ment; (3) quality-control information. (Joseph T. Ryerson & Son, Inc.)
For free copy circle No. 12 on postcard, p. 119

Safety Valve

A bulletin describes a new safety valve which automatically shuts off in case of fire or accidental bumping. (Jordan Industrial Sales Div., OPW Corp.)
For free copy circle No. 13 on postcard, p. 119

Diesel Engines

Two diesel engines recently added to one maker's line are described by a 16-page catalog. (Allis Chalmers Mfg. Co.)
For free copy circle No. 14 on postcard, p. 119

Electric Kilns

A 4-page bulletin announces a complete line of periodic and continuous electric ceramic kilns. (Hevi-Duty Electric Co.)
For free copy circle No. 15 on postcard, p. 119

Automatic Welders

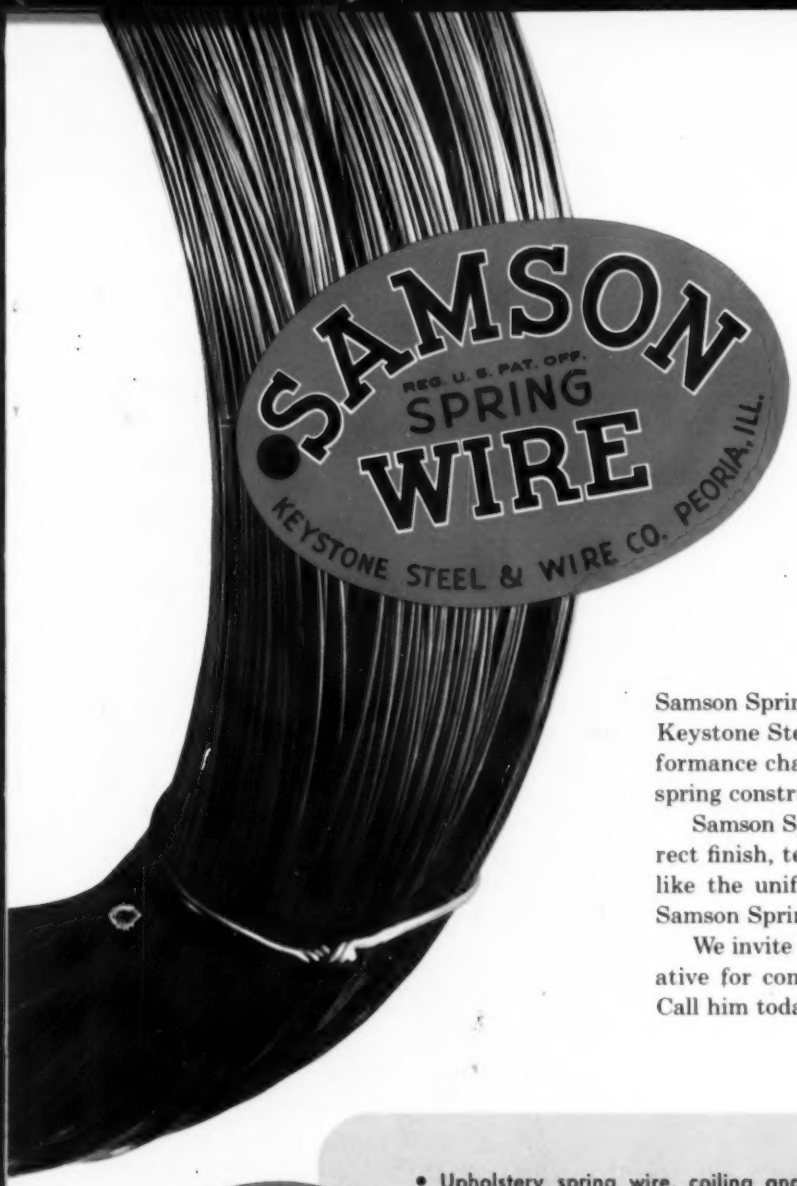
Automatic welding units are described in a folder. It covers: multi-purpose machines and positioners, automatic chucking units and automatic handling units. (Airline Welding Sales, Inc.)
For free copy circle No. 16 on postcard, p. 119

Solid-film Lube

Where you should use solid film lubricants is explained in a 4-page bulletin. It introduces a long-lasting product, bonded to the surface, which affords dry, clean and dust-free advantages. (Electrofilm, Inc.)
For free copy circle No. 17 on postcard, p. 119

Barrel Finishers

Featuring electronic controls, modern-design precision barrel finishers handle many jobs. These units perform deburring, microfinishing, speed polishing, grinding, honing, coloring, and burnishing. (Speed-D-Burr Corp.)
For free copy circle No. 18 on postcard, p. 119



. . . meets every spring construction requirement

Samson Spring Wire—an up-to-the-minute product of Keystone Steel & Wire Company, with modern performance characteristics—is available to fulfill every spring construction.

Samson Spring Wire is custom made with the correct finish, temper and tensile to fit each use. Users like the uniform size and coiling characteristics of Samson Spring Wire.

We invite you to contact your Keystone representative for complete details on Samson Spring Wire. Call him today—or write direct.

name your need . . .

- Upholstery spring wire, coiling and knotting quality
- Upholstery spring wire for marshall pack units
- Special upholstery spring wire for use in automatic coiling and knotting machines
- Common lacing wire
- Special automatic lacing wire
- Spring wire for cross helical springs and for short tension springs
- High carbon wire for borders and braces
- High carbon wire for cold rolling into border and brace sections
- Wire for severe crimping or clinching upholstery spring construction

Keystone Steel & Wire Company
Peoria 7, Illinois

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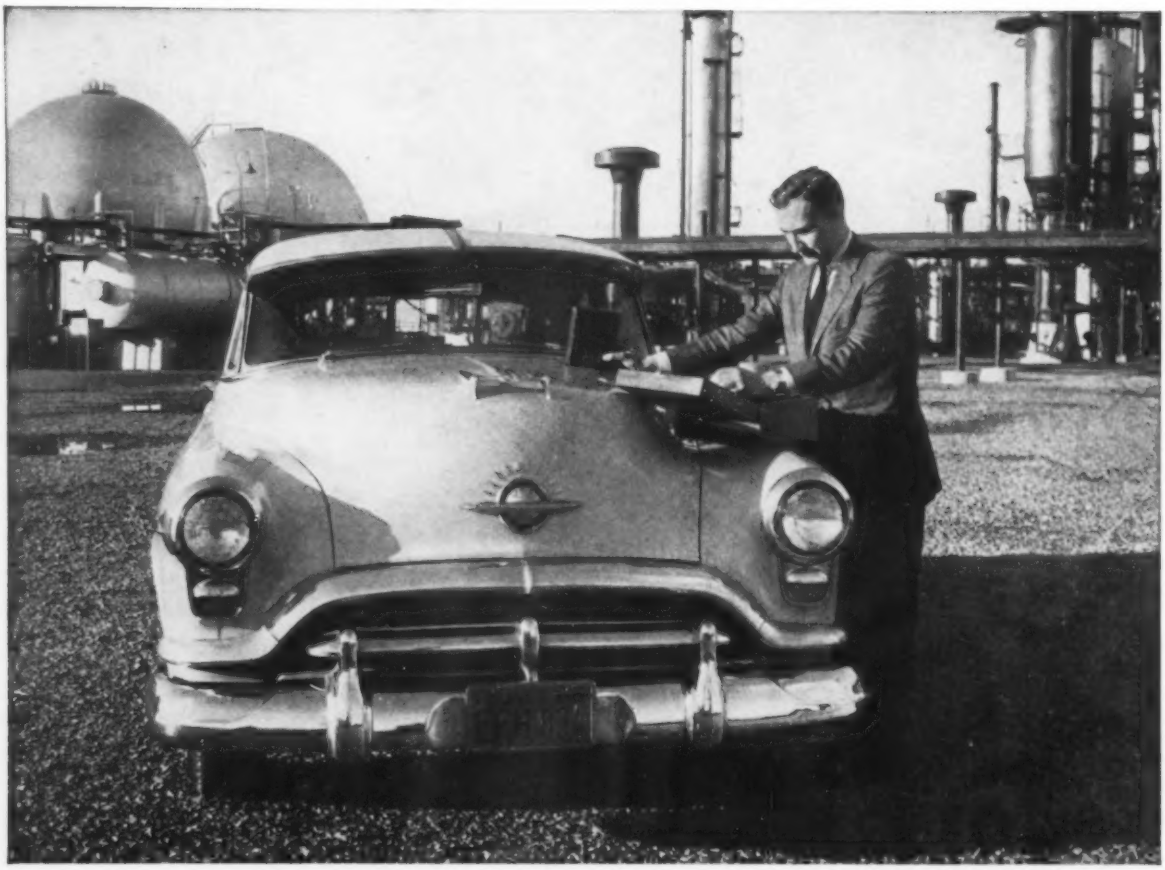
WIRE FOR INDUSTRY

Now! HIGH-GLOSS FINISHES
that stay new longer...



After 24 months—new Isophthalic-based refinishing enamel had 85% of original gloss

The above automobile, repainted with an Isophthalic-based enamel, has undergone weather testing for the past 24 months. After repainting, the car was not waxed—has never been garaged or polished and was washed only occasionally. Recent Photovolt gloss meter readings show the enamel has 85% of its initial gloss. There is no evidence of film failure by cracking or checking.

This and other tests prove Isophthalic refinishing enamels have a wide margin of superiority in hardness, durability and gloss retention over conventional commercial-grade enamels.

If you're looking for longer life and better performance in automotive refinishing enamels, farm implement enamels or industrial enamels—it will benefit you to inquire about this important new Oronite raw material. Write Oronite directly or ask your paint supplier about new Isophthalic-based enamels.

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4732

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Soldering Irons

Soldering irons reported on by an 8-page bulletin include lightweight, calorized and ironclad tips and tubular heaters. Case histories offer money saving ideas. (General Electric Co.)

For free copy circle No. 21 on postcard

Tool Bits

High speed steel tool bits, immediately available from stock, come in three grades. In flats and squares, they are described in a pricing data sheet. (Pratt & Whitney Co., Inc.)

For free copy circle No. 22 on postcard

Rolling Mill

Rolling mills are featured in a catalog. Included are models with roll diameters from 3 to 20 in. A comprehensive section covers mills for laboratory and advanced development work. (For free copy write on company letterhead to Fenn Mfg. Co., Newington, Conn.)

Centrifugal Pumps

Corrosion-resistant centrifugal pumps are covered in a specifications guide. It offers data helpful to solvers of pump problems. Some misunderstood terms and nomenclature are defined. (Ampco Metal, Inc.)

For free copy circle No. 23 on postcard

Lathes

Wondering if your next lathe will be a moneymaker? If so, maybe a new 8-page booklet can help. It presents a check-list of minimum design and construction requirements for low cost light-duty and engine lathe operation. You can apply these to many different lathes. (Cincinnati Lathe & Tool Co.)

For free copy circle No. 24 on postcard

Platinum Products

A platinum works has issued three new brochures. A 20-page one shows some end-uses of small diameter stainless steel, nickel and nickel alloy tubing. Another is a platinum products catalog. The third, on thermo element wires, is aimed at thermocouple users or makers. (J. Bishop & Co.)

For free copy circle No. 25 on postcard

Comparator

On-the-job gaging to 0.00002 in. is provided by an electronic comparator covered in an 8-page brochure. (Threadwell Tap & Die Co.)

For free copy circle No. 26 on postcard

Flights, Feedscrews

Flights and feedscrews are described in a data sheet. It tells how one manufacturer produces quality flights and feedscrews to customer specifications. (James Eagen & Sons, Inc.)

For free copy circle No. 27 on postcard

High-vacuum Valves

Right angle poppet type high-vacuum valves in a new series are covered in a data sheet. Valves are suited for low-pressure applications in the micron range. (F. J. Stokes Corp.)

For free copy circle No. 28 on postcard

Materials Handlers

Industrial platform trucks are illustrated in a 6-page folder. Also covered are 15 types of two-wheel hand trucks. (The Fairbanks Co.)

For free copy circle No. 29 on postcard

Grinder Gage

By using a new electronic gage, you can get quick, accurate ad-

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 4/10/58

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FREE LITERATURE

justments of grinder swivel tables every time, says a 4-page folder. It explains how the amplification unit simplifies close-limit working on the manufacturer's grinding machines. The gage can also check work diameters. (Landis Tool Co.)

For free copy circle No. 30 on postcard

Pyrometers

Printed circuits, lead length compensation, and flexibility are key features of a new line of pyrometers. An 8-page bulletin outlines uses on heat treating equipment, as well as special applications in measuring, speed, vacuum, power, density and acidity. (General Electric Co.)

For free copy circle No. 31 on postcard

Industrial Casters

Extra heavy-duty industrial casters are briefly covered in a data sheet. It describes a product that gives fine swivel and rolling action under 5-ton per caster loads. Wheels come in 8 and 10-in. diameters. (Faultless Caster Corp.)

For free copy circle No. 32 on postcard

Rust Preventive

Spray-on type rust preventive material in aerosol containers is outlined in a data sheet. It lists properties and some uses in manufacturing, tool and die shops. (E. F. Houghton & Co.)

For free copy circle No. 33 on postcard

Acid-resist Ware

Acid-resistant ware for industrial and laboratory use is described in a 16-page catalog. It covers 64 products unaffected by concentrated acids, oxidizing agents, hydroxides and polar liquids. (General Scientific Equipment Co.)

For free copy circle No. 34 on postcard

Toolroom Grinding

Toolroom grinding is discussed in a bulletin. It reviews wheel types, sizes and markings applicable for high speed steel cutter and drill sharpening. And it covers vertical spindle, rotary table and reciprocating table surface grinding. (Robertson Mfg. Co.)

For free copy circle No. 35 on postcard

Dew Point Gage

Fully illustrated, an 8-page bulletin describes a highly accurate instrument for determining dew points. In checking bottled gas, gas transmission lines or compressed air lines, this instrument makes dew point determinations quickly and easily. (Illinois Testing Laboratories, Inc.)

For free copy circle No. 36 on postcard

Structural Sandwich

A bulletin introduces what it calls a structural sandwich. This is an unusually designed structural material which has two separate structural halves. These are oined to make a sandwich. (Zahorski Engineering, Inc.)

For free copy circle No. 37 on postcard

Refractories

Pouring pit refractories for steel plants are presented in a 4-page bulletin. Refractories include: ladle linings, circle and cord brick linings and universal brick linings. Sleeves, nozzles and hot tops are also covered. (H. K. Porter Co.)

For free copy circle No. 38 on postcard

Welding Machinery

Machinery for automatic welding is featured in a 4-page bulletin. It covers: multi-purpose machines and positioners; automatic chucking units; automatic travel setups, and automatic ejectors. (Airline Welding Sales, Inc.)

For free copy circle No. 39 on postcard

Work Benches

Nearly 400 different types of workbenches are included in a line described in a booklet. (Equipto Div., Aurora Equipment Co.)

For free copy circle No. 40 on postcard

facts about LEDLOY* FREE-MACHINING STEELS

Inland's Special Ledloy Screw-machining Steels Outperform B1113 and in Certain Cases Brass*

There are two grades of Inland Ledloy Steels that have been developed specifically for automatic screw-machine operations, Ledloy Grade A and Ledloy Grade B.

Ledloy Grade A, the most widely used leaded steel grade, machines from 25% to 55% faster than regular free-machining steels and yet retains all the desirable characteristics. Ledloy Grade A contains .15/.35% lead—uniformly dispersed through the steel so that it has no appreciable effect on the steel except to increase its machinability to a marked degree. Ledloy Grade A retains all the properties of open hearth free-machining steel of comparable base analysis.

Whatever you have been machining from regular free-machining steels you can machine from Inland Ledloy Grade A and increase your machining time up to 55%, and at the same time, obtain a superior surface.

The place of Inland Ledloy Grade A has been so firmly established in the screw-machining industry that the A.I.S.I. and S.A.E. have adopted a new grade designation tailored to its specifications. *The new standard grade designation is* C12L14.

Inland Ledloy Grade B, the fastest machining steel produced commercially today, was developed by Inland to replace brass in the manufacture of parts where machinability is the all-important factor. Ledloy Grade B provides much greater strength than brass, yields more parts per pound and yet machines from 80 to 90% as fast as the more costly free-machining brass grades.

Ledloy Grade B, like Grade A, is an open hearth steel with all the desirable open hearth steel qualities. It is rephosphorized, resulphurized and lead treated. The only difference between the two grades is that Grade B contains a higher sulphur content. This additional sulphur increases the machinability of Grade B over Grade A about 25%.

In deciding which grade of Inland Ledloy is best for a particular part you are machining, weigh carefully the following factors: amount of machining to be done on part, type of machining, machining time per cycle, strength required in finished part and cost of material.

Where average machining is called for, you will probably find Ledloy Grade A the most practical. Where more machining operations per part are required, or where the machining is more intricate, Grade B will probably be more satisfactory. The additional cost of Grade B can be more than made up in decreased machining costs.

Whichever grade of Inland Ledloy is best for your particular machining operation, you will find that Ledloy will provide fast machining and excellent finish for the parts you make. Ledloy, because of its lower friction component and inherent lubricating characteristics, will also greatly increase the life of your cutting tools.

Many grades available—Inland Ledloy free-machining steels are available in a wide range of standard carbon and alloy grades in bar form. Ledloy free-machining plates are also produced.

If your product requires machining, it will pay you to get all the details on Inland Ledloy . . . the original leaded steels. Ask your cold-drawer about them today, or write Inland Steel Company, 30 West Monroe Street, Chicago 3, Illinois, for the interesting booklet, "Properties of Inland Ledloy Steels."

INLAND STEEL

Sales Offices: Chicago · Milwaukee · St. Paul · Davenport
St. Louis · Kansas City · Indianapolis · Detroit · New York

INLAND

Ledloy Steels
the world's most machinable

*Reg. Trade Mark

New Production Ideas

Equipment, Methods and Services

Automatic Line Processes Brass Tubing

Straightening, cutting to length, and recoiling from long coils of nonferrous tubing is done continuously on this unit. One operator handles the entire job. The complete line has a pay-off table, entry pinch roll stand, roller straightener, footage counter, cut-off saw and recoiler. One or more components can be eliminated if not needed. A continuous draw-bench can be added to finish-draw or sink the tube if needed. All components required are interlocked both mechanically and electrically into one integrated operation. Thus, one man handles the whole line. Copper, brass or aluminum tubing 3/16 to 1-in. OD can be handled at speeds up to 260 fpm. The single operation machine offers continuous operation, tube straightened in two planes, and recoiled tubing ready for packaging and shipping. (Loma Machine Mfg. Co., Inc.)

For more data circle No. 41 on postcard, p. 119

Barrel Finisher Can Serve Small Shops

Twin compartments and a built-in media separating system make this finisher suitable for small shops. Accessory separating equipment isn't required thanks to the built-in screening drawers that handle the discharged load. This also saves the time required for such a separating operation. Neoprene lined, the twin-compartment 5.6 cu ft barrel handles a work load up to 700 lb. Speeds of 8 to 38 rpm permit many types of finishing operations. Different types of work can be tumbled at the same time due to the divided barrel. The unit suits plants with limited finishing work, research departments and shops needing an extra unit for special jobs. It takes less than 12 sq ft of floor space. Although designed for processing small and medium lots of parts, the versatile tumbler serves as an auxiliary unit for deburring and finishing special parts. (Almco-Queen Products, Inc.)

For more data circle No. 42 on postcard, p. 119

Mobile Radios Have Transistor Power Supply

Two-way mobile radios with transistorized power supplies suitable for inner-plant or intra-plant communication are available. These units, offered in ratings up to 100 watts, employ transistors to replace both the vibrator and dynamotor. Black finned heat sinks conduct the heat away from the externally mounted transistors. Having long, trouble free lives, they give the user extended periods with little maintenance. The size and weight of the units have been reduced, permitting dash mounting of the smaller model. Power supply efficiency is increased over older models; this reduces primary power consumption. The radiophones will operate from any 12-volt source. Models are available with squelch circuits to eliminate interference. (Motorola, Inc.)

For more data circle No. 43 on postcard, p. 119

Turning Rolls

Power and idler turning rolls are offered in two models for rotating small and medium diameter pipe. Diameters from 3½ to 36 in. fit one model. The other handles pipe from 10 to 60 in. The diameter range for each model is with fixed wheel spacing. A variable speed driven

gear reducer drives the rubber tires through a knurled wheel. Welding speeds vary from 6 to 60 ipm. The power roll has a turning and weight capacity of 6000 lb. when used with two idler roll stands. When a single idler stand is used the weight capacity is 4000 lb. (Pandjiris Weldment Co.)

For more data circle No. 44 on postcard, p. 119

Welding Kit

A packaged welding outfit includes all the equipment necessary for welding, cutting, brazing, soldering and heating in a 12-lb box. The equipment, even including 25 ft of twin hose is housed in either a 20-gage steel case or heavy kraftboard carton. Two models are available; one cuts up to 4-in. steel plate and welds to ½ in.; the other cuts 1½ in. and welds ¼ in. (K-G Equipment Co.)

For more data circle No. 45 on postcard, p. 119

Quick-change Chucks

Quick-change chucks in a new line assure safe tool changes on radial drills and drill presses. They accommodate sequence drilling, counterboring, reaming, and tapping operations on single-spindle machines. To change tools, the opera-

ATLAS *all-steel*

TURNTABLES

BALL BEARING MOUNTED

FLAT-TOP

Checkered safety top with or without latches. Standard to 96" diameter.

P-2777

FLUSH RAIL

Single or crossed track models, with latches and pit ring. Standard to 96" diameter. Also available with raised rails.

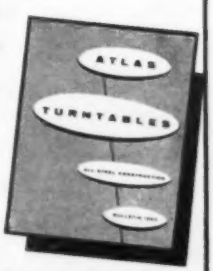
P-2805

POWER-OPERATED

30-ton flush-rail, 16-foot diameter turntable designed for 90° power rotation. Power-operated mechanism moves cars on and off.

P-3188

Atlas welded, all-steel turntables are stronger, cost less than cast units. Standard sizes available to 96" diameter, but can be provided to any required size and capacity. New adjustable center bearing design reduces load on outer ball bearing raceways, greatly reducing effort needed to turn tables.



Request turntable bulletin for detail.

ATLAS CAR & MFG. CO.

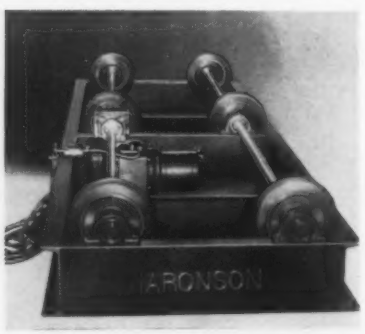
1140 Ivanhoe Rd., Cleveland 10, Ohio

tor grips a plastic guard instead of the collet; he lifts the locking ring of the chuck with the other hand. The guard lip prevents the collet from slipping through the operator's fingers. The guard rotates freely on the collet. At high spindle speeds, the operator can lift the guard without touching the collet or cutting tool; this cuts accidents, tool damage. (Scully Jones & Co.)

For more data circle No. 46 on postcard, p. 119

Turning Roll

Cylinders in a wide range of sizes are handled in this line of unit frame turning rolls. Positive drive through a variable speed transmission gives speeds up to 100-ipm weld travel. These units have load capacities up to 20,000 lb. They'll handle cylindrical vessels from 3 in. to 6 ft diam with lengths up to 20 ft. Ad-

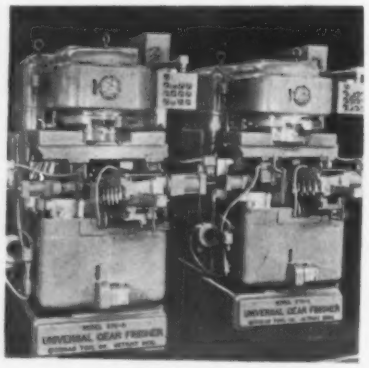


justment of the wheels is done without using keyways on the driveshaft. Various sizes of rubber and steel tires having taper lock hubs are available. Four center distance settings permit setting up for various diameter vessels. All models have a safety disconnect switch and magnetic reversing starter. (Aronson Machine Co.)

For more data circle No. 47 on postcard, p. 119

Gear Loader

Fast economical finishing of geared shafts is possible with a new automatic parts loading and unloading device, designed to work with rotary gear finishing machines. Addition of this equipment permits one operator to handle a battery of machines. Parts are manually stockpiled in the loader; all other operations including unloading are automatic. Air cylinders combined with limit switches handle and position the gear shafts one at a time. If the part is not meshed with the



cutter it is rejected to avoid cutter damage. After finishing, parts are carried to the rails of the conveyor which allows only one part at a time to pass. (Michigan Tool Co.)

For more data circle No. 48 on postcard, p. 119

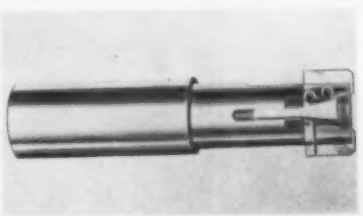
Gasket Material

Developed to eliminate seepage and leakage, a new type cork gasket material is available. The binder surrounding the particles approaches the chemical inertness of cork itself, improving the compound's resistance to contained fluids. The material seals at flange pressures as low as 100 psi. Flange loads up to 4000 psi will not crush it or cause it to extrude. (Armstrong Cork Co.)

For more data circle No. 49 on postcard, p. 119

Boring Tool

Hole-size capacity of a new boring tool can be expanded or reduced without removing blades



from the bar or taking it from the set-up. Blades are expanded via a tapered socket head screw adjusted from the bar end. One full turn expands the cutters 0.020 in. on the diameter, permitting close adjustment. Due to its rigidity, the tool is capable of heavy cuts for roughing as well as finishing. Standard sizes cover 1¼ to 4½ in. holes. (Robert H. Clark Co.)

For more data circle No. 50 on postcard, p. 119

Ground Clamps

Welders can attach this ground clamp to a cable with only a wrench. The simple connection consists of a cable socket drilled in the clamp casting. At right angle to this, another hole is drilled and tapped to receive a ball point set screw. To install a cable, the welder inserts the bare end of the cable in the socket and tightens the set screw down on the cable strands with a wrench. All strands are under pressure insuring a good connection. A

steel ring attached to the clamp tightens around the cable jacket to support it and eliminate strand breakage at the connection. (Tweco Products, Inc.)

For more data circle No. 51 on postcard, p. 119

Triple Punch Press

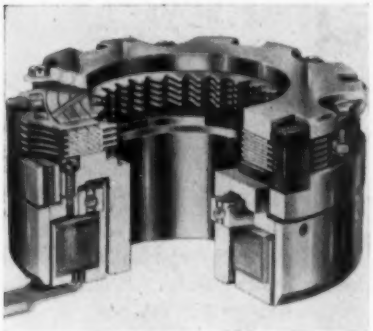
A unique triple punch press handles long progressive die work as well as punching, forming and blanking where long die sets are necessary. The unit consists of three 5-ton punch presses mounted on a heavy frame with crankshaft and rams operating together. The drive is at a central point reducing differences in torsional twist. The three bolster beds are planed parallel to within ±0.002 in. for

die set alignment. The presses set on 42-in. centers which allow a die area of 8 x 102 in. (Kenco Mfg. Co.)

For more data circle No. 52 on postcard, p. 119

Magnetic Clutches

Magnetic clutches and brakes now available provide fast, precise control of automatic machinery, machine tools and instrumentation. Small diameters, very short axial length, large bores and compact pre-



cision assembly make these units usable in a wide variety of new design applications. Clutches and brakes come with torque ratings from 36 to 48,000 in.-lb and in sizes from 2 to 13 in. (Fawick Corp.)

For more data circle No. 53 on postcard, p. 119

Load Shifter

A side shift attachment permits fork truck operators to shift loads right or left for precise spotting without maneuvering the truck. It simplifies car loading by permitting movement of three inches to either side. Two models, the standard and heavy - duty, are available. (Clark Equipment Corp.)

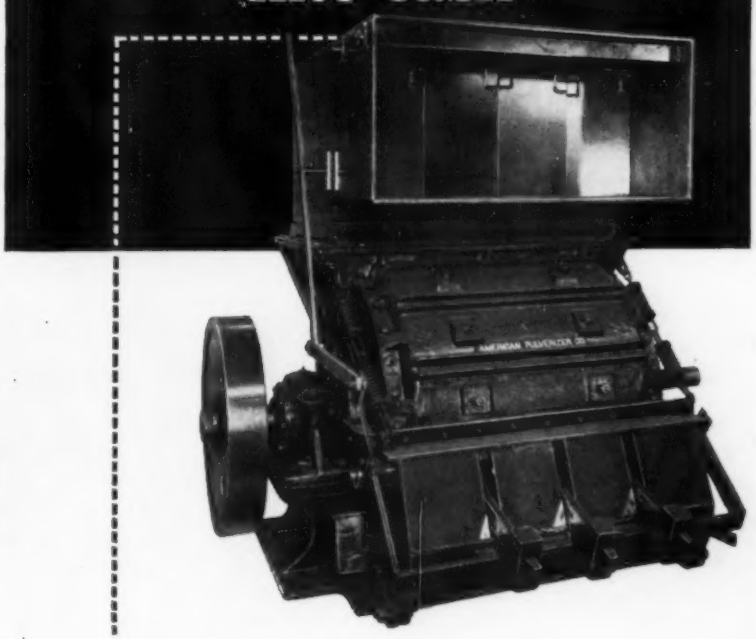
For more data circle No. 54 on postcard, p. 119

Copper-coat Steel

Electrolytic-copper and cold rolled strip combine in a new product. This copper-coated strip is the result of careful annealing and heat treating. These operations and uniform plating suit the stock for intricate drawing and forming. Strip comes in 0.004 to 0.040-in. thicknesses, up to 28-in. widths. (Jones & Laughlin Steel Corp.)

For more data circle No. 55 on postcard, p. 119

convert metal turnings into cash

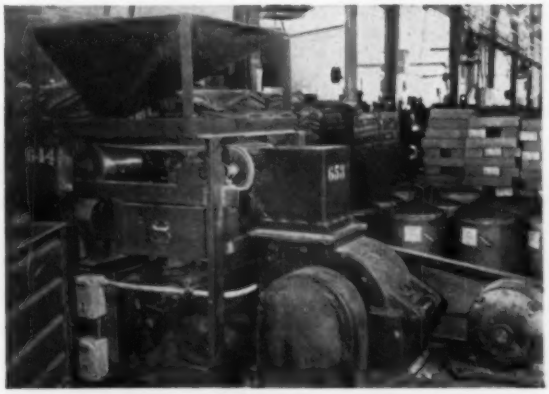


Long, curly, troublesome metal turnings, reduced in an American Metal Turnings Crusher, can produce additional profits for your plant.

Reduced to chip form, metal turnings bring $2 to $5 more per ton. Handling metal chips by shovel or pneumatic systems is easier, too, and chips require **75% less storage** space than bulky machine turnings. You'll recover more cutting oil from chips . . . up to 50 gallons per ton! More important, American Metal Turnings Crushers pay for themselves and produce substantial profits for years to come. Models available with capacities ranging from 1 to 50 tons per hour. To get all the details, write American today.

reclaim fused welding flux

One industrial plant saved more than $10,000 a year by using an American Welding Flux Crusher to regranulate fused welding flux. Write American for details.



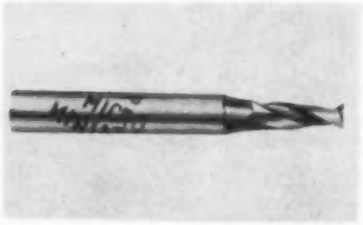
American PULVERIZER COMPANY

ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS

1439 MACKLIND AVE. SAINT LOUIS 10, MISSOURI

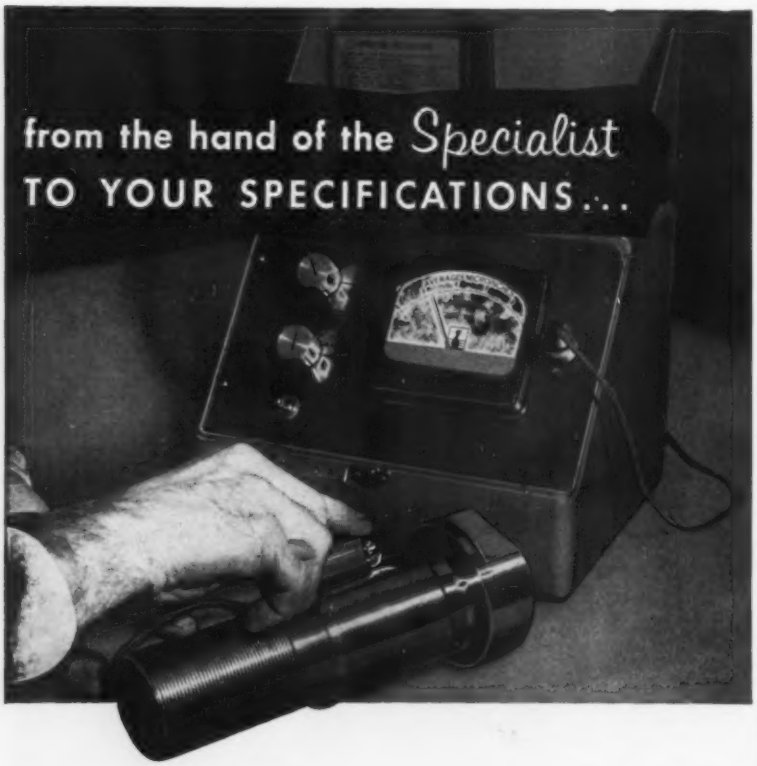
End Mills

Intermediate sizes of miniature end mills have been added to a manufacturer's line. These sizes, previously available on special order, now come in standard sizes from 1/32 through 3/16 in. in increments of 1/64. All grinding operations on the mills are done after the high speed steel has been heat treated. Grinding lines are



parallel to the cutting edges. (Woodson Tool Co.)

For more data circle No. 56 on postcard, p. 119



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In Alloys • Stainless • Carbon • Bronze

The reading on this Surfindicator measures more than just the fine finish on this special bolt. It measures the result of the precision craftsmanship your own specifications receive at Erie Bolt & Nut Company. Producing a wide variety of special fasteners to resist corrosion, extremes in temperature and tensile stresses as specified is our exclusive job . . . has been for almost half a century.

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ERIE BOLT & NUT CO.
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Sealing Tape

Sticking tightly to both glass and metal, this sealing tape features easy application. It applies directly from the roll. Tests indicate that it will provide long life, weathertight seals for years, even under extreme weather conditions. Designed to meet building needs for curtain wall construction, it also offers possibilities as a sealer in aircraft, automotive and marine industries. (Pittsburgh Plate Glass Co.)

For more data circle No. 57 on postcard, p. 119

Flow-control Valve

A new valve permits precise control of air, gas or low pressure hydraulic flow with unrestricted return. The valve features locked screw adjustment and a unique combination of controlling elements, a threaded stem and molded nylon flapper. The lower range of flow rates is metered by adjusting the position of the ground cylindrical stem within a concentric bore in the valve body.

As the regulating portion of the stem clears the bore, the stem end contacts the flapper, lifting it off its seat. Flow is then controlled by the clearance between the flapper and seat. (Valvair Corp.)

For more data circle No. 58 on postcard, p. 119

Transformers

This three-phase, dry type transformer can serve lighting or power installations. Outputs range from 6 to 2000 kva. All standard sizes and models are available in the 600-v, 5-kv, 8.66-kv and 15-kv insulation

classes. Sound levels are well within NEMA standards. Special transformers with low decibel ratings can be supplied for indoor installation in plants or plant offices where noise might interfere with normal work

output. This transformer and others in the maker's line are built to meet or exceed NEMA, AIEE, NEC and ASA standards. (Hevi-Duty Electric Co.)

For more data circle No. 59 on postcard, p. 119

Driller, Reamer

Small and compact, this machine processes aircraft parts. It drills, countersinks and reams from four sides simultaneously. The machining sequence can be varied due to the use of demountable feeder units. Additional operations can be done over and above these because the feeder units have a 10-in. stroke.

An index table with four holding fixtures rotates the parts between feed and return of the drill heads. Drilling capacity is up to 1¼-in. diam. Rated production is 80 pieces per hour. Cycling is fully automatic. (Zagar Inc.)

For more data circle No. 60 on postcard, p. 119

Travel Indicator

An indicator for use with any machine tool measures complete longitudinal travel of the machine as well as transverse and vertical travel on some tools. The instrument reads any length in 6-in. increments, furnishing visual record in inches, hundredths and thousandths on its large dial. The indicator shows traverse by recording revolutions of a slip proof wheel that contacts the way or other smooth surface of the machine tool. The instrument is accurate within 0.001 in. in six in. of travel. (M. E. Hodge Corp.)

For more data circle No. 61 on postcard, p. 119

SR . . . the dc rectifier type welder with new completely sealed semimetallic rectifier, new transformer and new weld stabilized circuit. Result is easiest arc starting ever; maximum arc stability; sounder, denser welds; current that handles all electrodes in all positions! Four models, 200 to 600 amps.
SRH . . . the same revolutionary improvements that set the Gold Star SR above and beyond the performance standards ever before achieved by a dc rectifier type welder. Designed primarily for compactness, the SRH is only 30¼" high — is ideally suited for stacking or paralleling in minimum space. Three models, 200 to 400 amps.
The miller GOLD STAR ALL STAR LINE
300 . . . combination ac/dc welder design comes of age with this new Miller model. Features: new magnetic amplifier circuit; improved wave form; new arc starting control; three electrically controlled current ranges for finest adjustment; instant changeover from ac to dc; built-in high frequency. An entirely fresh concept for inert gas and metallic welding. Four basic models with kits available to convert to seven different types of welders.
300-M . . . an ac welder for inert gas and metallic arc processes. Combines unequalled welding characteristics with Miller's unique electric control circuit which permits precise slow or fast start. Features: built-in high frequency, primary contactor and ½ KVA control transformer. Offered in three basic models of from 200 to 400 amperes with optional water and gas controls available.
Complete particulars on any of the above welders will be sent promptly.
miller ELECTRIC MANUFACTURING COMPANY, INC. Appleton, Wisconsin
Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal, P. Q.

"How can we squeeze 2½¢ out of production costs?"

Questions like this are nothing new to Ryerson specialists.

With their broad experience in steel applications, they can often suggest ways to save—a different type or analysis, steel in ready-to-use form, or an improvement in fabrication methods that will shave a few pennies off the final unit cost without impairing quality.

Add to this service the nation's largest steel stocks, unequaled processing facilities, fast delivery to meet any emergency—and you have the reasons why more steel users call Ryerson.

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Member of the INLAND Steel Family

Principal Products: Carbon, alloy and stainless steel—tubing, bars, structurals, plates, sheets—aluminum, industrial plastics, metalworking machinery, etc.

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The Iron Age Summary

Mills Get Bad News From Detroit

Automakers say they'll be buying only limited tonnages for balance of '58 model year.

Inventory cutbacks still major factor in continuing steel market slump.

▪ The auto industry handed steel mills an extra big helping of bad news this week. Detroit has told steelmakers it will be buying only limited tonnages for the balance of the 1958 model year.

This means that steel companies can expect little help from Detroit toward pulling out of the current slump before August or September. At that time the automakers will be taking in steel for 1959 model production.

Hopes Blasted—While not unexpected, the news from Detroit blasted hopes that the automakers would step up output in anticipation of a possible strike over new labor contract demands. Apparently the auto companies figure that current car inventories are enough to last for a long time, strike or no strike.

The depressed automotive market is largely responsible for the new wave of plant shutdowns and cutbacks in steel. The mills now figure there is little chance of an overnight spurt in steel demand. So they can afford to consolidate operations in more efficient plants. It was pointed out that the shutdown of a mill is such an expensive proposition that its probable duration must be long enough to justify the cost.

Consoling Thoughts—Steel men are consoling themselves with the thought that the market can't get much worse than it is. But the fact is that no one is quite sure that the bottom has been reached. New order volume is still fluctuating from week-to-week, so there's no real evidence that an uptrend is in the making.

Meanwhile, the mills are still plagued by the inventory cutbacks of their customers. It's estimated this week that industry is buying about five million tons of steel per month, or one million tons less than it is using.

Inventories Near '54 Bottom—Market researchers differ on exact tonnages of steel in inventory, but they agree that stocks will soon be at the level which 1954 showed to be absolute rock bottom. They will soon be half of last year's peak level, or around 12 to 13 million tons.

From a steel shipment standpoint, some sources believe the turning point has been reached. April shipments are showing a slight improvement following a steady decline from January through March. At this rate, the steel operating rate should move up into the high 50's or low 60's in the current three-month period. But even this would be short-lived. Another slowdown is looked for in July before operations move up again. Assuming that automotive returns to the market in third quarter, the worst could be over by Labor Day.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	1,306	1,312	1,425	2,317
Ingot Index				
(1947-1949=100)	81.3	81.7	88.7	144.2
Operating Rates				
Chicago	57.0	54.0	58.0	90.0
Pittsburgh	49.5	52.0*	54.0	96.0
Philadelphia	50.5	52.5	56.0	102.0
Valley	38.0	37.5*	45.0	87.0
West	77.0	64.0*	73.5	102.0
Cleveland	30.0	34.0*	37.0	86.0
Buffalo	39.0	39.0	37.0	93.0
Detroit	11.5	21.0*	47.0	96.0
South	56.0	53.0*	49.5	96.0
South Ohio River	41.0	45.5*	51.0	63.0
Upper Ohio River	69.0	73.0*	77.5	95.0
St. Louis	65.5	70.0	85.0	101.0
Northeast	31.0	31.0	31.0	67.0
Aggregate	...	48.6	52.8	90.5

*Revised

Prices At a Glance

(cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.670
Pig Iron (Gross ton)	$66.49	$66.49	$66.49	$64.56
Scrap, No. 1 hvy (Gross Ton)	$33.50	$34.00	$37.33	$42.67
No. 2 bundles	$24.83	$25.17	$28.50	$34.33
Nonferrous				
Aluminum ingot	26.10	26.10	28.10	27.10
Copper, electrolytic	25.00	25.00	25.00	32.00
Lead, St. Louis	11.80	12.80	12.80	15.80
Magnesium ingot	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	92.00	92.50*	95.75	99.125
Zinc, E. St. Louis	10.00	10.00	10.00	13.50

Adhesives Aim for New Uses

New customers and applications are keeping adhesive sales humming along.

But manufacturers say most of their markets are to a great extent untapped.

▪ Adhesive manufacturers feel they have hardly scratched the surface of possible applications for their products. It's a growth field, they say.

Of course, they admit, there are still some obstacles to be overcome. But these aren't so sticky they can't be taken in stride.

Sales Holding—Largely because of versatility, adhesives are selling about as well as a year ago. There was a period of inventory adjusting as users, noting the general downtrend in business, became more cautious. The market bottomed out in December and has been moving well since.

Structural adhesives, those with the higher tensile strengths, have not felt the strain as much as the market as a whole. Some managed to continue their growth while the overall market was tailing off.

The slump in auto production is cutting heavily into the market for sealers, bonderizers, and rust preventive coatings. However, new users have pushed sales to other markets higher than last year, in many cases. There is good strength evident in ordnance, missiles, electrical and electronic equipment.

Outlook for 1958—The net effect will probably be less business in 1958 for firms that serve the auto industry, but not much. Most of the other adhesive makers anticipate a slight increase.

While inventories are often down to 30 days, from the usual 45 to 60 days, new orders are holding up well. Customers are not ordering as much at a time, but they are buying more often.

There has been an increase in the number of emergency orders.

Custom Adhesives — "Don't get me wrong, we aren't complaining," said one sales manager. "Business is good, and we like it that way. But emergency orders do give us some headaches."

While there are any number of "shelf" items available, much of the business is "custom." Adhesive makers tailor a product to fit the customer's specific need—strength, heat resistance, method of application. An emergency batch means juggling manufacturing schedules.

The fastest growing form of adhesive is the film—literally a sheet of adhesive with no solvent. The advantages are obvious — easily placed by non-skilled help, no flow when curing, speed of operation, longer shelf life. Manufacturers are channeling much of their efforts in extending the range of adhesives that they can offer in this form.

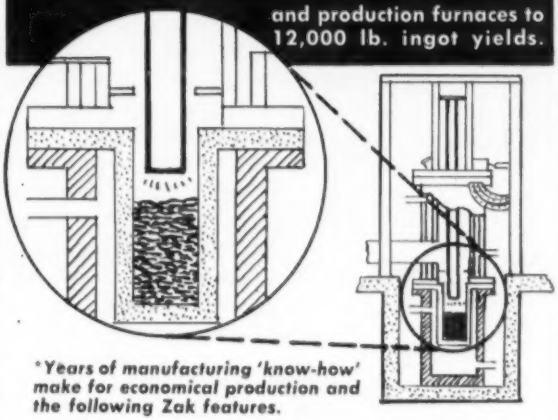
Auto Markets—One of the most promising markets for adhesives is automotive. It is one of the biggest today, but adhesive makers say a vast potential is still untapped. One bright application is for installing brake linings, clutches and automatic transmission bands. Adhesives are moving in via the replacement road. Only 30 pct of original equipment brakes have bonded linings; nearly 90 pct of replacement linings are bonded.

One manufacturer says he expects adhesives take over the auto applications for which body solder is now used. He says about two or three lb of adhesive will do the job of seven lb of body solder, the average per car. At about $1 per lb for the adhesive, he sees this as a tremendous market.

POTENTIAL: Automakers buy a lot of adhesives, for example, bonding insulation to the roofs of trucks. Adhesive manufacturers are hoping they will be buying even more soon. (Minnesota Mining and Mfg. Co.)

VACUUM ARC RESEARCH FURNACES

and production furnaces to 12,000 lb. ingot yields.



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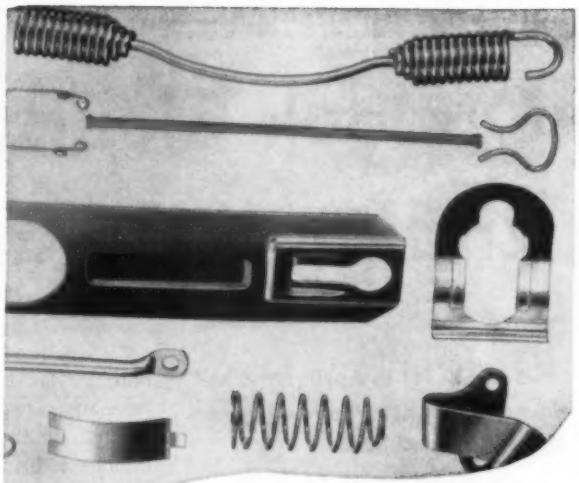

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Outlook Cloudy For 2nd Quarter Gains

Sales boost in April, May, and June could help pave way for strong second half.

But inventory liquidations are still swallowing up any gains in product use.

▪ Steel marketers are hoping for a sales improvement this quarter. But any gains will represent an uphill battle for them.

There are a few helpful factors. The arrival of warmer weather should aid products which go into construction work. The prospect of higher steel prices after July 1 might spur some hedge buying.

However, inventory reductions—which will eventually stimulate demand—are still working against the sellers. Although less tonnage is being consumed, users are still paring stocks. It's estimated they are buying a million less tons a month than they are consuming.

Take It Out of Stock—Even where product use is rising, sellers find buyers are not ordering steel, but dipping into supplies. It's especially true right now on plates and shapes. Several plate mills, as a result, may take time out for routine maintenance shutdowns this month.

Automotive buyers have virtually shut the door on any large-scale sheet and strip orders until fall. And other sheet and strip buyers are usually guided by Detroit's actions. If the market is brisk they get on mill order books as a precaution. If not, they wait and buy as they need steel.

A second quarter spurt in steel sales would buoy up the spirits of both buyers and sellers. It could pave the way for increased market strength in the fall. But it will be difficult to bring off.

Sheet and Strip — Automotive steel buyers have told mills they are about through placing large tonnage orders for the 1958 models. From here on out it will be mainly inventory filling. The next substantial wave of orders won't come until August tonnages are specified in late June or early July. Meanwhile, with automotive steel ordering at low ebb, **Detroit** area mills are almost non-productive.

Producers in other areas say orders for April are coming in slowly. Some customers are even showing more interest in May tonnages. Galvanized sheet, reflecting the seasonal pickup in construction, has improved.

Bars — April sales are either holding about even with March or slipping a bit. Although the order volume is larger, actual tonnages involved are usually small. Reinforcing bar has strengthened due to construction demand, with foreign producers getting a good share of the market. Imports are coming into Gulf Coast ports for sale at $25-$30 a ton under U. S. prices.

Pipe and Tubing—Lack of a decision on the Memphis case appeal is puzzling and annoying pipe producers. They feel even an unfavorable finding would resolve the question, permitting study of alternate solutions to the rate making hassle.

Meanwhile, a few pipeline projects are going ahead despite the legal stalemate. They are mainly new ones with no past rate history or those not affected by the issue. As a result, some pipe mills are starting up operations.

Plates and Shapes — April tonnages are coming in very slowly and whether the month will match March is doubtful. Producers report user inventories are still high. On three new jobs, for example, the fabricators needed 7000 tons of structurals, but got all except 1000 tons out of inventory. A small fabricator at **Pittsburgh** has 10,000 tons of plate in stock and uses only 15,000 tons in a good year.

Wire—Sales are up but, as noted by one mill man, "the gain is only a few thousand tons over one of the worst slumps ever." Still, **Midwest** mills describe wire products as one of their strongest items.

In the **Pittsburgh** district, U. S. Steel is suspending steelmaking operations at the Donora works of American Steel & Wire Div.

Stainless — Mills supplying the auto industry have been hard hit. McLouth Steel has shut down its electric furnaces. Jones & Laughlin's Stainless Div. is operating at about 60 pct of capacity every other week. About half of its existing production is stainless, the other half alloy steel.

Warehouses—Some outlets mention strong gains for the opening days of April and the closing days of March. The increase is in nearly all products, although reinforcing bars are particularly active. **Detroit** suppliers indicate a pickup in orders for cold-rolled steel from tool and die shops.

PURCHASING AGENT'S CHECKLIST

What roadbuilding speedup will mean to business. **P. 55**

Iron ore stocks are piling up at shipping ports. **P. 59**

New system speeds order processing at Republic Steel. **P. 62**

COMPARISON OF PRICES

(Effective April 8, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**: declines appear in *Italics*.

	Apr. 8 1958	Apr. 1 1958	Mar. 11 1958	Apr. 9 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.925¢	4.925¢	4.925¢	4.675¢
Cold-rolled sheets	6.05	6.05	6.05	5.75
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.30
Hot-rolled strip	4.925	4.925	4.925	4.675
Cold-rolled strip	7.17	7.17	7.17	6.870
Plate	5.12	5.12	5.12	4.87
Plates, wrought iron	13.15	13.15	13.15	10.40
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	50.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$9.95
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	8.65
Special coated mfg. ternes	9.55	9.55	9.55	9.20
Bars and Shapes: (per pound)				
Merchant bar	5.425¢	5.425¢	5.425¢	5.075¢
Cold finished bars	7.30	7.30	7.30	6.85
Alloy bars	6.475	6.475	6.475	6.125
Structural shapes	5.275	5.275	5.275	5.00
Stainless bars (No. 302)	45.00	45.00	45.00	43.25
Wrought iron bars	14.45	14.45	14.45	11.50
Wire: (per pound)				
Bright wire	7.65¢	7.65¢	7.65¢	7.20¢
Rails: (per 100 lb.)				
Heavy rails	$5.525	$5.525	$5.525	$5.275
Light rails	6.50	6.50	6.50	6.25
Semifinished Steel: (per net ton)				
Rerolling billets	$77.50	$77.50	$77.50	$74.00
Slabs, rerolling	77.50	77.50	77.50	74.00
Forging billets	96.00	96.00	96.00	91.50
Alloy blooms, billets, slabs	114.00	114.00	114.00	107.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.15¢	6.15¢	6.15¢	5.80¢
Skelp	4.875	4.875	4.875	4.225
Finished Steel Composite: (per pound)				
Base price	5.967¢	5.967¢	5.967¢	5.670¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

	April 8 1958	April 1 1958	March 11 1958	April 9 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.97	$70.97	$70.97	$68.88
Foundry, Valley	66.50	66.50	66.50	65.00
Foundry, Southern Cin'ti	73.87	73.87	73.87	67.17
Foundry, Birmingham	62.50	62.50	62.50	59.00
Foundry, Chicago	66.50	66.50	66.50	65.00
Basic, del'd Philadelphia	70.47	70.47	70.47	68.38
Basic, Valley furnace	66.00	66.00	66.00	64.50
Malleable, Chicago	66.50	66.50	66.50	65.00
Malleable, Valley	66.50	66.50	66.50	65.00
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross ton)				
Pig iron	$66.49	$66.49	$66.49	$64.56
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	*$33.50*	$34.50	$37.50	$41.50
No. 1 steel, Phila. area	*$7.50*	38.00	38.00	47.00
No. 1 steel, Chicago	29.50	29.50	36.50	39.50
No. 1 bundles, Detroit	*$2.50*	24.50	32.50	34.50
Low phos., Youngstown	*$3.00*	34.50	38.50	41.50
No. 1 mach'y cast, Pittsburgh	*49.50*	51.50	51.50	49.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	55.50
No. 1 mach'y cast, Chicago	*44.50*	46.50	48.50	45.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	*$33.50*	$34.00	$37.33	$42.67
No. 2 bundles	*24.83*	25.17	28.50	34.33
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.38	$15.38	$15.38	$15.38
Foundry coke, prompt	$17.50-$19	$17.50-$19	$17.50-$19	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	25.00	25.00	25.00	32.00
Copper, Lake, Conn.	25.00	25.00	25.00	32.00
Tin, Straits, N. Y.	*92.00*†	92.50*	95.75	99.125
Zinc, East St. Louis	10.00	10.00	10.00	13.50
Lead, St. Louis	*11.80*	12.80	12.80	15.80
Aluminum, virgin ingot	26.10	26.10*	28.10	27.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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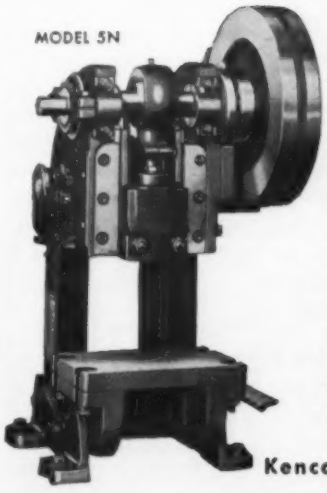

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No Mill Buying, Prices Continue to Drop

Threat by mills to cut inventories further contributes to bearish outlook.

Prices are again approaching the bottom. Continued low steel operations prevent any real price comeback.

▪ A Pittsburgh report states that a market vacuum continues to suck prices down. That's the situation in almost every consuming area.

The market appears to be heading for bottom again, and fast is approaching the levels of last December. At that time, prices were said to be below a "realistic" level. Now the bottom is in sight again.

There are no signs to indicate an upturn. Only an increase or valid belief in a steel upturn is apt to raise the price levels. And there is little hope for any early improvement in steel operations.

Adding more bearish symptoms to the market are indications that mills are out to reduce their own scrap inventories as an economy measure to cut down inventory carrying costs. With mills buying very little, and in some cases no scrap, further inventory cutbacks would be disastrous to many dealers.

With little buying in prospect, the trade is thoroughly demoralized. Many dealers are pinched financially, but can't even get small sales to keep up their operating costs. Others are forced to sell distress tonnage to keep solvent.

Pittsburgh — A market vacuum continues to suck prices down. Dealer openhearth grades are off $1. No. 1 railroad heavy melting is down $3 on the basis of early lists. There is absolutely no demand for the best openhearth grades. Trading is limited to occasional barge loads or carloads of No. 2 bundles at prices ranging from $25 to $27 a ton. Cast grades, turnings, and most railroad grades share in the weakness. Railroad specialties are down $1 but are still the most active and strongest grade.

Chicago — The market stalled, not because of a firming market, but because of complete mill indifference to scrap at any price. Scrap continued to move on old orders, but new orders were at a standstill. The broker buying price range spread sharply, as some continued to fill old orders while others lowered prices rather than "go along" in the current market. Both stainless and cast grades began showing weakness.

Philadelphia—A sale of No. 1 heavy melting was made at $38, or 50¢ below last week's quoted price. The trade was hit this week by news that the only mill buying scrap in this district has withdrawn from the market. Export activity continues, but at a diminishing rate. Inactivity in the turnings market is responsible for a $2 drop in these grades.

New York — Rumors of a price drop are plentiful. Reason for the gloom is a report that European buyers will slash second quarter purchases by 200,000 tons. The turnings market has collapsed from continued lack of business. Prices dropped as much as $4.

Detroit—Market activity is at a standstill. Most dealers say that any reasonable price will bring scrap, and each day the idea of "reasonable" goes a little lower. Only one Detroit mill is operating this week, leaving the district rate at only 11.5 pct of capacity.

Cleveland — The market settled another $1 on steelmaking grades as mills continue to hold off. Dealer market is about nonexistent, even for distress tonnage. Mills are talking about cutting inventory further, as an economy measure. Rail lists dropped sharply, about $7 under a month ago.

St. Louis—Better weather bringing heavier movement of scrap and the need for cash by many dealers have caused a softer feeling in the market here. Mills have been taking in more than they are consuming.

Birmingham — Although most consumers are completely out of the market, brokers have reduced prices from $1 to $3 per ton on most items. Buyers say they will reduce prices to that extent when they return to the market.

Cincinnati — Flow of scrap is very low as dealers reluctantly sell small tonnages to meet expenses. Brokers have only small orders and are filling them slowly. Foundry strike now in its eighth week has killed the market.

Buffalo — Small tonnages of openhearth grades have moved at quoted prices. These prices are the same as the last sale made in January.

Boston — The situation here is still gloomy. There is no business at all with no sales to establish firm price levels. Most secondary grades are down $1 on the general weakening of the market.

West Coast — Mills are taking only limited tonnages. Rumors persist that exporting will pick up soon. Prices remain steady, but No. 2 bundles are weak. Collections are slow due to wet weather.

SCRAP PRICES *(Effective April 8, 1958)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	33.00 to 34.00
No. 1 factory bundles	36.00 to 37.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	33.00 to 34.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and ms. turn.	15.00 to 16.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. punch'gs plate	36.00 to 37.00
Heavy turnings	29.00 to 30.00
No. 1 RR hvy. melting	35.00 to 36.00
Scrap rails, random lgth.	50.00 to 51.00
Rails 2 ft and under	54.00 to 55.00
RR steel wheels	46.00 to 47.00
RR spring steel	46.00 to 47.00
RR couplers and knuckles	46.00 to 47.00
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	42.00 to 43.00
Heavy breakable cast.	40.00 to 41.00
Stainless	
18-8 bundles and solids	180.00 to 185.00
18-8 turnings	105.00
430 bundles and solids	110.00 to 115.00
410 turnings	60.00

Chicago

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy melting	27.00 to 28.00
No. 1 dealer bundles	29.00 to 30.00
No. 1 factory bundles	35.00 to 36.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. forge crops	45.00 to 46.00
Low phos. punch'gs plate	38.00 to 39.00
Low phos. 3 ft and under	36.00 to 37.00
No. 1 RR hvy. melting	35.00 to 36.00
Scrap rails, random lgth.	45.00 to 46.00
Rerolling rails	53.00 to 54.00
Rails 2 ft and under	50.00 to 51.00
Locomotive tires cut	44.00 to 45.00
Cut bolsters & side frames	41.00 to 42.00
Angles and splice bars	45.00 to 46.00
RR steel car axles	53.00 to 54.00
RR couplers and knuckles	41.00 to 42.00
No. 1 machinery cast.	44.00 to 45.00
Cupola cast.	37.00 to 38.00
Heavy breakable cast.	35.00 to 36.00
Cast iron brake shoe	36.00 to 37.00
Cast iron wheels	32.00 to 33.00
Malleable	49.00 to 50.00
Stove plate	35.00 to 36.00
Steel car wheels	39.00 to 40.00
Stainless	
18-8 bundles and solids	165.00 to 170.00
18-8 turnings	80.00 to 95.00
430 bundles and solids	95.00 to 100.00
430 turnings	50.00 to 55.00

Philadelphia Area

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	26.00 to 27.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	16.00 to 17.00
Mixed bor. short turn.	17.00 to 18.00
Cast iron borings	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
Clean cast. chem. borings	32.00 to 33.00
Low phos. 5 ft and under	41.00 to 42.00
Low phos. 2 ft and under	42.00 to 43.00
Low phos. punch'gs	42.00 to 43.00
Elec. furnace bundles	38.00 to 39.00
Heavy turnings	33.00 to 34.00
RR steel wheels	45.00 to 46.00
RR spring steel	45.00 to 46.00
Rails 18 in. and under	58.00 to 60.00
Cupola cast.	38.00 to 39.00
Heavy breakable cast.	43.00 to 44.00
Cast iron car wheels	45.00 to 46.00
Malleable	60.00 to 62.00
Unstripped motor blocks	32.00 to 33.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$29.50 to $30.50
No. 2 hvy. melting	26.50 to 27.50
No. 1 dealer bundles	29.50 to 30.50
No. 2 bundles	20.00 to 21.00
Machine shop turn.	11.50 to 12.50
Mixed bor. and turn.	11.50 to 12.50
Shoveling turnings	14.00 to 15.00
Cast iron borings	11.50 to 12.50
Low phos, 18 in. and under	36.00 to 37.00
Rails, random length	43.00 to 44.00
Rails, 18 in. and under	51.00 to 52.00
No. 1 cupola cast.	39.00 to 40.00
Hvy. breakable cast.	32.00 to 33.00
Drop broken cast.	45.00 to 46.00

Cleveland

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	29.00 to 30.00
No. 1 factory bundles	32.00 to 33.00
No. 2 bundles	19.00 to 20.00
No. 1 bushelings	29.00 to 30.00
Machine shop turn.	10.50 to 11.50
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Cut structural & plates, 2 ft & under	38.00 to 39.00
Drop forge flashings	29.00 to 30.00
Low phos. punch'gs plate	30.00 to 31.00
Foundry steel, 2 ft & under	34.00 to 35.00
No. 1 RR heavy melting	34.50 to 35.50
Rails 2 ft and under	53.00 to 54.00
Rails 18 in. and under	54.00 to 55.00
Railroad grate bars	14.00 to 15.00
Steel axle turnings	17.00 to 18.00
Railroad cast.	46.00 to 47.00
No. 1 machinery cast.	45.00 to 46.00
Stove plate	42.00 to 43.00
Malleable	58.00 to 59.00
Stainless	
18-8 bundles	165.00 to 170.00
18-8 turnings	90.00 to 95.00
430 bundles	95.00 to 100.00
430 turnings	40.00 to 45.00

Buffalo

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	25.50 to 26.50
No. 1 busheling	28.00 to 29.00
No. 1 dealer bundles	28.00 to 29.00
No. 2 bundles	22.50 to 23.50
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	14.00 to 15.00
Low phos. plate	34.00 to 35.00
Structurals and plate, 2 ft and under	37.00 to 38.00
Scrap rails, random lgth.	40.00 to 41.00
Rails 2 ft and under	50.00 to 51.00
RR steel wheels	37.00 to 38.00
RR spring steel	33.00 to 34.00
RR couplers and knucklers	33.00 to 34.00
No. 1 machinery cast.	45.00 to 46.00
No. 1 cupola cast.	41.00 to 42.00

St. Louis

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	22.00 to 23.00
Machine shop turn.	17.00 to 18.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
No. 1 RR hvy. melting	36.00 to 37.00
Rails, random lengths	45.00 to 46.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	47.00 to 48.00
Std. steel car axles	51.00 to 52.00
RR specialties	42.00 to 43.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	30.00 to 31.00
Cast iron brake shoes	37.00 to 38.00
Stove plate	38.00 to 39.00
Cast iron car wheels	35.00 to 36.00
Rerolling rails	55.00 to 56.00
Unstripped motor blocks	34.00 to 35.00

Birmingham

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	31.00 to 32.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	35.00 to 36.00
Elec. furnace, 3 ft & under	33.00 to 34.00
Bar crops and plate	38.00 to 39.00
Structural and plate, 2 ft	38.00 to 39.00
No. 1 RR hvy. melting	35.00 to 36.00
Scrap rails, random lgth.	45.00 to 46.00
Rails, 18 in. and under	49.00 to 50.00
Angles & splice bars	42.00 to 43.00
Rerolling rails	49.00 to 50.00
No. 1 cupola cast.	50.00 to 51.00
Stove plate	49.00 to 50.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	36.00 to 37.00
Unstripped motor blocks	39.00 to 40.00

Youngstown

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	32.00 to 33.00
No. 2 bundles	22.00 to 23.00
Machine shop turn.	12.00 to 13.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. plate	32.50 to 33.50

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 dealer bundles	18.00 to 20.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	11.00 to 12.00
Clean cast. chem. borings	25.00 to 26.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	34.00 to 35.00
Charging box cast.	32.00 to 33.00
Heavy breakable cast.	32.00 to 33.00
Unstripped motor blocks	27.00 to 28.00
Stainless	
18-8 prepared solids	140.00 to 145.00
18-8 turnings	50.00 to 55.00
430 prepared solids	70.00 to 75.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	17.00 to 18.00
No. 1 dealer bundles	23.00 to 24.00
No. 2 bundles	13.00 to 14.00
No. 1 busheling	22.00 to 23.00
Drop forge flashings	21.00 to 22.00
Machine shop turn.	6.00 to 7.00
Mixed bor. and turn.	7.00 to 8.00
Shoveling turnings	8.00 to 9.00
Cast iron borings	8.00 to 9.00
Low phos. punch'gs plate	23.00 to 24.00
No. 1 cupola cast.	32.00 to 33.00
Heavy breakable cast.	22.00 to 23.00
Stove plate	27.00 to 28.00
Automotive cast.	32.00 to 33.00
Stainless	
18-8 bundles and solids	70.00 to 75.00
18-8 turnings	70.00 to 75.00
430 bundles and solids	70.00 to 75.00
410 turnings	25.00 to 30.00

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$27.00 to $28.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 dealer bundles	26.00 to 27.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	26.00 to 27.00
Elec. furnace, 3 ft & under	31.00 to 32.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and short turn.	8.00 to 9.00
Shoveling turnings	9.00 to 10.00
Clean cast. chem. borings	18.00 to 19.00
No. 1 machinery cast.	33.00 to 34.00
Mixed cupola cast.	29.00 to 30.00
Heavy breakable cast.	29.00 to 30.00
Stove plate	26.00 to 27.00
Unstripped motor blocks	26.00 to 27.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast.	42.00

Los Angeles

No. 1 hvy. melting	$34.00
No. 2 hvy. melting	32.00
No. 1 dealer bundles	30.00
No. 2 bundles	22.00
Machine shop turn.	$9.00 to 11.00
Shoveling turnings	11.00 to 13.00
Cast iron borings	11.00 to 13.00
Elec. furn. 1 ft and under (foundry)	45.00
No. 1 RR hvy. melting	36.00
No. 1 cupola cast.	41.00 to 43.00

Seattle

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 2 bundles	24.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$45.00 to 50.00

Diecasting Markets Hit Bottom

Diecasters sigh with relief as markets stop falling off.

Many expect sales to hold current level, while a few say business is improving.

Institute reports 1957 was industry's third best year despite a bad fourth quarter.

▪ There's a tinge of optimism developing among independent diecasters. Just about everyone agrees the bottom has been reached. Many expect business to drag along at current levels for a while. But some report things have picked up ever so slightly in the last week or so.

The consensus is that customer inventories have been cut to the bone. Buying is hand-to-mouth, with frequent small rush orders.

Deliveries—At least one major job shop expects to be "rushing to deliver" when an upturn comes. It says customers may have cut inventories too much. But most believe the improvement will be too gradual to cause much strain on production facilities.

A cross section of the industry indicates the current level of a diecaster's business depends to a great extent on the metal he is working, and the market he is selling. Most of the reported uptrends come from companies primarily casting aluminum for other than auto uses.

The uncertainty of zinc prices and the requested tariff hike is keeping zinc die casting depressed. The sag in auto sales has automakers buying hand-to-mouth more than ever before.

Report on 1957—Last year was the third best ever for diecasters, says the American Die Casting Institute. Aluminum alloy diecasting hit a new high. And zinc casting output was only 3.1 pct below 1956. But this is not the full story.

Die Casting Production

Zinc

1957—351,500 tons

1956—362,500 tons

1955—410,000 tons

Aluminum

1957—202,350 tons

1956—198,125 tons

1955—192,650 tons

The diecasting industry hit its peak in 1955. Since then, output and sales revenues, while still good, have tailed off. Production during the first half of 1957 promised a record year. But the fourth quarter sagged badly enough to more than nullify this. The wide variation in production rates "adversely affected operating results out of proportion to the volume changes," says the Institute.

Other than the sharp change in business, most industry factors held their historical position. Custom shops still do most of the business, making 71.3 pct of aluminum diecastings, and 64 pct of the zinc.

Auto Market—Automotive continues to be the big market, taking 56.9 pct of zinc diecastings, and 42.8 pct of aluminum. Both metals registered gains in this market in 1957.

According to the Institute, the average 1957 car has 72.4 lb of zinc diecastings, compared with 71.3 lb in 1956. It also has 30.6 lb of aluminum diecastings, up from 29.1 lb the previous year.

Diecasters also hit new highs in shipments to several customer industry groups. Office equipment and business machine makers bought more zinc diecastings. They, and agricultural equipment makers; photographic, optical, and scientific device manufacturers; and the toy, sporting goods, and personal goods industries bought more aluminum diecastings.

Price Changes

Lead dropped 1¢ per lb, on April 2, the first change since early December. The new price is 12¢ per lb at New York, 11.80¢ at St. Louis.

Du Pont knocked down two grades of ductile titanium metal sponge from 15¢ to 20¢ per lb. A-1 grade now costs $2.05 per lb, A-2 grade is reduced to $1.85 per lb. A-2 grades fines are unchanged at $1.65 per lb.

Tin prices for the week: April 2—92.50; April 3—92.625; April 4—holiday; April 7—92.50; April 8—92.00.*

* Estimate

Primary Prices

(cents per lb)	Current price	last price	date of change
Aluminum pig	24.00	26.00	4/1/58
Aluminum ingot	26.10	28.10	4/1/58
Copper (E)	25.00	27.00	1/13/58
Copper (CS)	24.00	23.50	3/24/58
Copper (L)	25.00	27.00	1/13/58
Lead, St. L.	11.80	12.00	4/2/58
Lead, N. Y.	12.00	13.00	4/2/58
Magnesium ingot	36.00	34.00	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	185-200	200-250	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 137.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish) and Plate

("P" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-3.
1100, 3003	46.6	44.3	43.6	42.7
5052	54.0	48.9	47.2	45.4
6061-0	51.4	47.0	45.2	45.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	45.0-46.8	60.4-64.1
12-14	45.7-47.2	61.3-65.8
24-26	49.0-49.5	72.1-76.8
36-38	58.0-58.6	96.2-99.8

Screw Machine Stock—2011-T-3

Size"	¾	⅞-1⅛	1¼-1½	1¾-1⅞
Price	63.0	62.5	61.0	58.6

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.420	$1.893	$2.367	$2.839
.024 gage	1.774	2.366	2.957	3.549

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	....	87.9	99.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	136	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	48.13	.....	45.36	48.32
Brass, 70/30	42.69	43.23	42.63	45.60
Brass, Low	44.90	45.44	44.84	47.71
Brass, R L	45.67	46.21	45.61	48.48
Brass, Naval	47.07	.....	41.38	50.48
Munts Metal	45.19	.....	41.00	.....
Comm. Bs.	46.98	47.52	46.92	49.54
Mang. Bs.	50.81	.....	44.91	.....
Phos. Bs. 5%	67.17	.....	67.67	.....

Free Cutting Brass Rod 31.03

TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, $9.50-$10.60; alloy, $14.75; Plate, HR, commercially pure, $8.00-$8.75; alloy, $10.75. Wire, rolled and/or drawn, commercially pure, $7.50-$8.00; alloy, $10.00. Bar, HR or forged, commercially pure, $6.15-$6.40; alloy, $6.15-$6.35; billets, HR, commercially pure, $6.00-$6.25; alloy, $6.00-$6.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.55
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb)....$2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 39.50 to 50.00
Gold, U. S. Treas, per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz. ...$80 to $90
Lithium, 98% .....$11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York .....$233 to $237
Nickel oxide sinter at Copper Cliff, Ont., contained nickel 71.25
Palladium, dollars per troy oz...$19 to $21
Platinum, dollars per troy oz...$72 to $75
Rhodium .....$120.00 to $125.00
Silver ingots (¢ per troy oz.)..... 88.625
Thorium, per kg. $43.00
Vanadium .....$ 3.45
Zirconium sponge .....$ 5.00

Remelted Metals

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 24.75
- No. 120 ..... 23.75
- No. 123 ..... 23.00

80-10-10 ingot
- No. 305 ..... 28.75
- No. 315 ..... 26.75

88-10-2 ingot
- No. 210 ..... 35.75
- No. 215 ..... 31.50
- No. 245 ..... 28.25

Yellow ingot
- No. 405 ..... 20.75

Manganese bronze
- No. 421 ..... 22.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.00-24.25
- 0.60 copper max. 23.75-24.00

Piston alloys (No. 122 type)..23.25-23.75
No. 12 alum. (No. 2 grade)...21.00-21.50
108 alloy 21.50-22.00
195 alloy 24.00-25.00
13 alloy (0.60 copper max.)...23.75-24.25
AXS-679 (1 pct zinc) 21.25-22.00

(Effective April 7, 1958)

Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97½% 23.00-24.00
Grade 2—92-95% 21.00-21.75
Grade 3—90-92% 20.00-20.75
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	21	20¼
Yellow brass	16½	14½
Red brass	18⅝	17⅞
Comm. bronze	19¼	18½
Mang. bronze	14⅞	14¼
Yellow brass rod ends	15⅞	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	19½
No. 2 copper wire	18
Light copper	15⅝
*Refinery brass	17½
Copper bearing material	16¾

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	19½
No. 2 copper wire	18
Light copper	15⅝
No. 1 composition	18½
No. 1 comp. turnings	18
Hvy. yellow brass solids	13
Brass pipe	15
Radiators	14¼
Aluminum	
Mixed old cast	12 —13
Mixed new clips	14½—15½
Mixed turnings, dry	12½—13½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	17½—18
No. 2 copper wire	15½—16
Light copper	13½—14
Auto radiators (unsweated)	11 —11½
No. 1 composition	14½—15
No. 1 composition turnings	13½—14
Cocks and faucets	12 —12½
Clean heavy yellow brass	10 —10½
Brass pipe	12 —12½
New soft brass clippings	13 —13½
No. 1 brass rod turnings	10½—11

Aluminum

Alum. pistons and struts	5 — 5½
Aluminum crankcases	9½—10
1100 (2S) aluminum clippings	12½—13
Old sheet and utensils	9½—10
Borings and turnings	6 — 6½
Industrial castings	9½—10
2024 (24S) clippings	11 —11½

Zinc

New zinc clippings	4 — 4½
Old zinc	3 — 3¼
Zinc routings	1¾— 2
Old die cast scrap	1½— 1¾

Nickel and Monel

Pure nickel clippings	42-45
Clean nickel turnings	37-40
Nickel anodes	42-45
Nickel rod ends	42-45
New Monel clippings	28-29
Clean Monel turnings	20-23
Old sheet Monel	25-26
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	7½— 8
Battery plates (dry)	2¾— 3
Batteries, acid free	1¾— 2

Miscellaneous

Block tin	75 —76
No. 1 pewter	59 —60
Auto babbitt	39 —40
Mixed common babbitt	11 —11½
Solder joints	14½—15
Siphon tops	42
Small foundry type	12 —12¼
Monotype	12 —12¼
Lino. and stereotype	11 —11¼
Electrotype	10 —10¼
Hand picked type shells	7 — 7½
Lino. and stereo. dross	3 — 3¼
Electro dross	2½— 2¾

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$114.00 *B3*		5.325 *B3*	7.80 *B3*	5.325 *B3*						
	Buffalo, N. Y.	$77.50 *R3, B3*	$96.00 *R3, B3*	$114.00 *R3, B3*	6.225 *B3*	5.325 *B3*	7.80 *B3*	5.325 *B3*	4.925 *R3, B3*	7.15 *S10*	7.325 *B3*			
	Phila., Pa.									7.70 *P15*				
	Harrison, N. J.													15.05 *C11*
	Conshohocken, Pa.		$101.00 *A2*	$121.00 *A2*					4.975 *A2*	7.20 *A2*	7.325 *A2*			
	New Bedford, Mass.									7.60 *R6*				
	Johnstown, Pa.	$77.50 *B3*	$96.00 *B3*	$114.00 *B3*		5.325 *B3*	7.80 *B3*							
	Boston, Mass.									7.70 *T8*				15.40 *T8*
	New Haven, Conn.									7.60 *D1*				
	Baltimore, Md.									7.15 *T8*				
	Phoenixville, Pa.					5.325 *P2*		5.325 *P2*						
	Sparrows Pt., Md.								4.925 *B3*		7.325 *B3*			
	Bridgeport, Wallingford, Conn.			$114.00 *N8*						7.60 *W1*				
	Pawtucket, R. I. Worcester, Mass.									7.70 *N7* 7.70 *A5*				15.40 *N7* 15.20 *T8*
MIDDLE WEST	Alton, Ill.								5.125 *L1*					
	Ashland, Ky.								4.925 *A7*					
	Canton-Massillon, Dover, Ohio		$96.00 *R3*	$114.00 *R3, T5*						7.15 *G4*		10.45 *G4*		14.85 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$77.50 *U1, R3*	$96.00 *U1, R3,W8*	$114.00 *U1, R3,W8*	6.225 *U1*	5.275 *U1, W8,P13*	7.75 *U1,Y1 W8*	5.275 *U1*	4.925 *W8, N4,A1*	7.25 *A1,T8 M8*			8.10 *W8, S9,I3*	15.05 *A1, S9,G4*
	Cleveland, Ohio									7.15 *A5,J3*		10.45 *A5*	8.10 *J3*	
	Detroit, Mich.			$114.00 *R5*					5.025 *G3, M2*	7.25 *M2,D1, D2,G3,P11*	7.425 *G3*	10.60 *D2* 10.55 *G3*	8.10 *G3*	
	Anderson, Ind.									7.15 *G4*				
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$77.50 *U1*	$96.00 *U1*	$114.00 *U1, Y1*		5.275 *U1, I3*	7.75 *U1, I3*	5.275 *I3*	4.925 *U1, I3,Y1*	7.15 *Y1*	7.325 *U1, I3,Y1*	10.60 *Y1*	8.10 *U1, Y1*	
	Sterling, Ill.	$77.50 *N4*				5.275 *N4*			5.025 *N4*					
	Indianapolis, Ind.									7.30 *J3*				15.20 *J3*
	Newport, Ky.												8.10 *A9*	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		$96.00 *S1, C10*	$114.00 *C10,S1*					4.925 *R3, S1*	7.15 *R3,T4 S1*	7.325 *R3, S1*	10.50 *S1* 10.45 *R3*	8.10 *S1*	15.05 *S1*
	Owensboro, Ky.	$77.50 *G5*	$96.00 *G5*	$114.00 *G5*										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$77.50 *U1, P6*	$96.00 *U1, C11,P6*	$114.00 *U1, C11,B7*	6.225 *U1*	5.275 *U1, J3*	7.75 *U1, J3*	5.275 *U1*	4.925 *P6*	7.15 *J3,B4, S7*			8.10 *S9*	15.05 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.225 *W3*	5.275 *W3*		5.275 *W3*	4.925 *W3*	7.15 *W3,F3*	7.325 *W3*	10.50 *W3*		
	Youngstown, Ohio	$77.50 *R3*	$96.00 *Y1, C10*	$114.00 *Y1*			7.75 *Y1*			7.15 *Y1,J3*	7.325 *U1, Y1*	10.65 *Y1*	8.10 *U1, Y1*	15.05 *J3* 10.65 *Y1*
WEST	Fontana, Cal.	$88.00 *K1*	$105.50 *K1*	$135.00 *K1*		6.075 *K1*	8.55 *K1*	6.225 *K1*	5.675 *K1*	9.00 *K1*				
	Geneva Utah		$96.00 *C7*			5.275 *C7*	7.75 *C7*							
	Kansas City, Mo.					5.375 *S2*	7.85 *S2*						8.35 *S2*	
	Los Angeles, Torrance, Cal.		$105.50 *B2*	$134.00 *B2*		5.975 *C7, B2*	8.45 *B2*		5.675 *C7, B2*	9.05 *J3* 9.20 *C1*			9.30 *B2*	17.25 *J3*
	Minnequa, Colo.					5.575 *C6*			6.025 *C6*	9.10 *K1*				
	Portland, Ore.					6.025 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$105.50 *B2*			5.925 *B2*	8.40 *B2*		5.675 *C7, B2*					
	Seattle, Wash.		$109.50 *B2*			6.025 *B2*	8.50 *B2*		5.925 *B2*					
SOUTH	Atlanta, Ga.					5.475 *A8*			4.925 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$77.50 *T2*	$96.00 *T2*			5.275 *T2, R3,C16*	7.75 *T2*		4.925 *T2, R3,C16*		7.325 *T2*			
	Houston, Lone Star, Texas		$101.00 *S2*	$119.00 *S2*		5.375 *S2*	7.85 *S2*						8.35 *S2*	

(Effective April 7, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Holloware Enameling 29 ga.
EAST	Bethlehem, Pa.												
	Buffalo, N. Y.	4.925 *B3*	6.05 *B3*				7.275 *B3*	8.975 *B3*		6.15 *W6*			
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	4.975 *A2*	6.10 *A2*				7.325 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.15 *B3*			
	Fairless, Pa.	4.975 *U1*	6.10 *U1*				7.325 *U1*	9.025 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	4.925 *B3*	6.05 *B3*	6.60 *B3*			7.275 *B3*	8.975 *B3*	9.725 *B3*	6.25 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.45 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.35 *L1*			
	Ashland, Ky	4.925 *A7*		6.60 *A7*	6.625 *A7*								
	Canton-Massillon, Dover, Ohio			6.60 *R3, R1*									
	Chicago, Joliet, Ill.	4.925 *W8, A1*					7.275 *U1*			6.15 *A5, R3,W8, N4,K2*			
	Sterling, Ill.									6.25 *N4, K2*			
	Cleveland, Ohio	4.925 *R3, J3*	6.05 *R3, J3*		6.625 *R3*		7.275 *R3, J3*	8.975 *R3, J3*		6.15 *A5*			
	Detroit, Mich.	5.025 *G3, M2*	6.15 *G3* 6.05 *M2*				7.375 *G3*	9.075 *G3*					
	Newport, Ky	4.925 *A1*	6.05 *A1*										
	Gary, Ind. Harbor, Indiana	4.925 *U1, I3,Y1*	6.05 *U1, I3,Y1*	6.60 *U1, I3*	6.625 *U1, I3,Y1*	7.00 *U1*	7.275 *U1, Y1,I3*	8.975 *U1, Y1*		6.15 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1,Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.125 *G2*	6.25 *G2*	6.80 *G2*	6.825 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.70 *C9*						6.25 *C9*			
	Mansfield, Ohio		6.05 *E2*			7.00 *E2*							
	Middletown, Ohio		6.05 *A7*	6.60 *A7*	6.625 *A7*	7.00 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	4.925 *R3, N3,S1*	6.05 *R3*	6.60 *R3*	6.625 *N3, S1*	7.00 *N3, S1,R3*	7.275 *R3*	8.975 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 *U1, J3,P6*	6.05 *U1, J3,P6*	6.60 *U1, J3*	6.625 *U1*		7.275 *U1, J3*	8.975 *U1, J3*	9.725 *U1*	6.15 *A5, J3,P6*	$10.05 *U1, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	4.925 *P7*	6.05 *P7*							6.15 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 *W3, W5*	6.05 *W3, F3,W5*	6.60 *W3, W5*		7.00 *W3, W5*	7.275 *W3*	8.975 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	4.925 *U1, Y1*	6.05 *Y1*		6.625 *Y1*		7.275 *Y1*	8.975 *Y1*		6.15 *Y1*			
WEST	Fontana Cal.	5.675 *K1*	7.30 *K1*				8.025 *K1*	10.275 *K1*			$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.825 *C7*											
	Kansas City, Mo.									6.40 *S2*			
	Los Angeles, Torrance, Cal.									6.95 *B2*			
	Minnequa, Colo.									6.40 *C6*			
	San Francisco, Niles, Pittsburgh, Cal.	5.625 *C7*	7.00 *C7*	7.35 *C7*						6.95 *C7*	$10.80 *C7*	$9.50 *C7*	
	Seattle, Wash.												
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	4.925 *T2, R3*	6.05 *T2, R3*	6.60 *T2, R3*	6.625 *T2*					6.15 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.									6.40 *S2*			

† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box.
* COKES: 1.50-lb. add 25¢.
ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.

(Effective April 7, 1958)

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforc-ing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfrs'. Bright
EAST	Bethlehem, Pa.				6.475 *B3*	8.775 *B3*	7.925 *B3*					
	Buffalo, N. Y.	5.425 *R3,B3*	5.425 *R3,B3*	7.35 *B5*	6.475 *B3,R3*	8.775 *B3,B5*	7.925 *R3*	5.10 *B3*		7.20 *B3*		7.65 *W6*
	Claymont, Del.							5.10 *C4*		7.20 *C4*	7.625 *C4*	
	Coatesville, Pa.							5.10 *L4*		7.20 *L4*	7.925 *L4*	
	Conshohocken, Pa.							5.20 *A2*	6.175 *A2*	7.20 *A2*	7.625 *A2*	
	Harrisburg, Pa.							5.10 *P2*	6.275 *P2*			
	Milton, Pa.	5.575 *M7*	5.575 *M7*									
	Hartford, Conn.			7.80 *R3*		9.075 *R3*	7.925 *B3*					
	Johnstown, Pa.	5.425 *B3*	5.425 *B3*		6.475 *B3*			5.10 *B3*		7.20 *B3*	7.625 *B3*	7.65 *B3*
	Fairless, Pa.	5.575 *U1*	5.575 *U1*		6.625 *U1*							
	Newark, N. J. Camden, N. J.			7.75 *W10* 7.75 *P10*		8.95 *W10* 8.95 *P10*						
	Bridgeport, Conn. Putnam, Conn. Willimantic, Conn.			7.85 *W10* 7.80 *J3*	6.55 *N8*	8.925 *N8*						
	Sparrows Pt., Md.		5.425 *B3*					5.10 *B3*		7.20 *B3*	7.625 *B3*	7.75 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			7.85 *B5,C14*		9.075 *A5,B5*						7.95 *A5, W6*
	Spring City, Pa.			7.75 *K4*		8.95 *K4*						
MIDDLE WEST	Altm, Ill.	5.625 *L1*										7.85 *L1*
	Ashland,Newport,Ky.							5.10 *A7,A1*		7.20 *A1*		
	Canton, Massillon, Ohio			7.30 *R3,R2*	6.475 *R3,T5*	8.775 *R3,R2, T5*						
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.425 *U1,R3, W8,N4,P13*	5.425 *U1,R3, N4,P13*	7.30 *A5, W10,W8 B5,L2,N9*	6.475 *U1,R3, W8*	8.775 *A5, W10,W8 L2,N8,B5*	7.925 *U1,W8*	5.10 *U1,A1, W8,13*	6.175 *U1*	7.20 *U1,W8*	7.625 *U1,W8*	7.65 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.425 *R3*	5.425 *R3*	7.30 *A5,C13 C18*		8.775 *A5, C13, C18*	7.925 *R3*	5.20 *R3,J3*	6.175 *J3*		7.625 *R3, J3*	7.65 *A5, C13*
	Detroit, Mich.	5.525 *G3*	5.775 *G3*	7.55 *P3* 7.50 *P8,B5*	6.475 *R5* 6.575 *G3*	8.775 *R5* 8.975 *B5,P3, P8*	8.025 *G3*	5.20 *G3*		7.35 *G3*		
	Duluth, Minn.											7.65 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.425 *U1,13, Y1*	5.425 *U1,13, Y1*	7.30 *R3,J3*	6.475 *U1,13, Y1*	8.775 *R3,M4*	7.925 *U1, Y1*	5.10 *U1,13, Y1*	6.175 *J3,13*	7.20 *U1,Y1*	7.625 *U1, Y1,13*	7.75 *M4*
	Granite City, Ill.							5.30 *G2*				
	Kokomo, Ind.		5.525 *C9*									7.75 *C9*
	Sterling, Ill.	5.525 *N4*	5.525 *N4*					5.10 *N4*				7.75 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.30 *C10*	6.475 *C10,S1*	8.775 *C10*	7.925 *S1*	5.10 *R3,S1*		7.20 *S1*	7.625 *R3, S1*	
	Owensboro, Ky.	5.425 *G5*			6.475 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 *U1,J3*	5.425 *U1,J3*	7.30 *A5,B4, R3,J3,C11, W10,S9,C8*	6.475 *U1,J3, C11,B7*	8.775 *A5, W10,R3,S9, C11,C8*	7.925 *U1,J3*	5.10 *U1,J3*	6.175 *U1*	7.20 *U1,J3, B7*	7.625 *U1,J3, B1*	7.65 *A5, J3,P6*
	Portsmouth, Ohio											7.65 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.10 *W5*				
	Youngstown, Ohio	5.425 *U1,R3, Y1*	5.425 *U1,R3, Y1*	7.30 *A5,Y1, F2*	6.475 *U1,Y1*	8.775 *Y1,F2*	7.925 *U1,Y1*	5.10 *U1,R3, Y1*		7.20 *Y1*	7.625 *U1, R3,Y1*	7.65 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.175 *J5* 6.125 *K1*	6.175 *J5* 6.125 *K1*		7.525 *K1*		8.625 *K1*	5.90 *K1*		8.00 *K1*	8.425 *K1*	
	Geneva, Utah							5.10 *C7*			7.625 *C7*	
	Kansas City, Mo.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*					7.90 *S2*
	Los Angeles, Torrance, Cal.	6.125 *C7,B2*	6.125 *C7,B2*	8.75 *R3,P14*	7.525 *B2*	10.75 *P14*	8.625 *B2*					8.60 *B2*
	Minnequa, Colo.	5.875 *C6*	5.875 *C6*					5.95 *C6*				7.90 *C6*
	Portland, Ore.	6.175 *O2*	6.175 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.125 *C7* 6.175 *B2*	6.125 *C7* 6.175 *B2*				8.675 *B2*					8.60 *C7,C6*
	Seattle Wash.	6.175 *B2,N6*	6.175 *B2*				8.675 *B2*	6.00 *B2*		8.10 *B2*	8.525 *B2*	
SOUTH	Atlanta, Ga.	5.625 *A8*	5.625 *A8*									7.65 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.425 *T2,R3, C16*	5.425 *T2,R3, C16*	7.90 *C16*			7.925 *T2*	5.10 *T2,R3*			7.625 *T2*	7.65 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*	5.20 *S2* 5.20 *L3*		7.30 *S2*	7.725 *S2*	7.90 *S2*

(Effective April 7, 1958)

† Merchant Quality—Special Quality 35¢ higher

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 J. & L. Steel Co., Stainless Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

STANDARD T. & C.	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *R3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Fontana *K1*	+8.25	+23.5	+5.25	+19.5	+1.75	+15.00	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Alton, Ill. *L1*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50	.....	.....	.....	.....	.....	.....	.....	.....
Sharon *M3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Fairless *N2*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Wheeling *W5*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Wheatland *W4*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Indiana Harbor *Y1*	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.75	+1.00	.....	.....	.....	.....	.....	.....	.....	.....
Lorain *N2*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *R3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	.....	.....	.....	.....	.....	.....	.....	.....
Fairless *N2*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50	.....	.....	.....	.....	.....	.....	.....	.....
Fontana *K1*	+3.75	.....	0.25	.....	3.25	.....	3.75	.....	4.25	.....	4.75	.....	5.25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Alton, Ill. *L1*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50	.....	.....	.....	.....	.....	.....	.....	.....
Sharon *M3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Wheeling *W5*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	.....	.....	.....	.....	.....	.....	.....	.....
Wheatland *W4*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Indiana Harbor *Y1*	8.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50	.....	.....	.....	.....	.....	.....	.....	.....
Lorain *N2*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50

Threads only, buttweld and seamless 2½ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower d'scounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective April 7, 1958)

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts	Pct. Discounts: Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
½" and smaller x 6" and shorter	49	54	56	57
5/8" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	60½
⅞ in. to 1 in. inclusive	55½
1⅛ in. to 1½ in. inclusive	58½
1⅝ in. and larger	53½
C. P. Hex, reg. & hvy.	
¾ in. and smaller	60½
⅞ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	46½
Semi-finished Hex Nuts	
⅝ in. or smaller	60½
¾ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½

(Add 25 pct for broken case or keg quantities)

Finished

⅞ in. and smaller 63

Rivets

	Base per 100 lb
½ in. and larger	$12.25
	Pct. Off List
7/16 in. and smaller	19

Cap Screws

	Discount (Packages) Full Finished H. C. Heat Treat
New std. hex head, packaged	
⅝" diam. and smaller x 6" and shorter	40 / 26
¾", ⅞", and 1" diam. x 6" and shorter	22 / 3
⅝" diam. and smaller x longer than 6"	8 / +13
¾", ⅞", and 1" diam. x longer than 6"	+6 / +32
	C-1018 Steel Full-Finished Cartons Bulk
¼" through ⅝" dia. x 6" and shorter	58 / 49
¾" through 1" dia. x 6" and shorter	45 / 33

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 1/16" through ¼" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Quantity	Discount Mach. Screws	Stove Bolts
Cartons		60	60
Bulk			
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Square
In Cartons		16	19
In Bulk			
⅝" diam. & smaller	25,000 and over	14	16

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955. value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	40.00
Electrodeposited	31.25
Brass, 80-20, ball anodes, 2000 lb or more	44.00
Zinc, ball anodes, 2000 lb lots	16.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes $1.13 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	68.70
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed, 300 lb	48.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.05
(Philadelphia price 24.50)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 10,000 lb or more	31.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, freight allowed west of Miss. River	9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	10.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	27.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe	88.0¢ to $2.85
Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	31.1¢ to 47.1¢
Copper, electrolytic	41.50¢
Copper, reduced	40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd	$5.00
Lead	21.50¢ lb, f.o.b. plant
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	$3.60 to $3.95
Nickel, chemically precipitated	$1.05
Nickel, unannealed	$1.00
Nickel, annealed	$1.06
Nickel, spherical, unannealed 80	$1.13
Silicon	43.50¢
Solder powder	13¢ plus met. value
Stainless steel, 302	$1.02
Stainless steel, 316	$1.30
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	$3.15 (nominal)
Zinc, 5000 lb & over	17.5¢ to 30.7¢

WAREHOUSES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvy.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68	.....	.....	.....	.....
Baltimore	$.10	8.38	8.98	9.78	8.86	8.76	9.29	9.16	11.44*	16.18	15.18	19.73	18.98
Birmingham	.15	8.18	9.45	10.15	8.23	8.56	8.64	8.60	10.57	.....	.....	.....	.....
Boston	.10	9.48	10.54	11.55	9.52	9.82	9.73	9.83	13.00	15.79	15.38	19.89	19.18
Buffalo	.15	8.40	9.15	11.22	8.65	9.05	9.05	8.95	11.05*	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.60	10.25	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60
Cincinnati	.15	8.49	9.65	10.25	8.69	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91
Cleveland	.15	8.33	9.60	10 35	8.48	8.94	9.16	8.84	10.95*	15.89	14.89	19.44	18.96
Denver	.20	9.70	11.30	12.49	9.80	9.70	9.80	9.98	10.65	.....	.....	.....	17.60
Detroit	.15	8.58	9.85	10.60	8.73	9.06	9.33	9.05	9.30	15.46	15.06	18.81	18.86
Houston		7.10	8.40	.....	7.25	7.70	7.25	7.20	11.10	16.20	.....	19.30	19.05
Kansas City	.20	9.02	10.27	10 82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles	.10	8.60**	10.85	11.75	8.65	8.65	8.70	8.65	13.35*	17.05	16.10	21.05	20.35
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12 11*	.....	.....	.....	.....
Milwaukee	.15	8.48	9.73	10.38	8.51	8.84	9.00	8.88	9.18	15.43	14.93	18.78	18.73
New York	.10	8.97	10.23	10.66	9.41	9.53	9.45	9.67	12.86*	15.02	15.19	18.42	18.99
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia	.10	8.10	9.00	9.97	8.79	8.87	8.60	8.75	11.61*	15.61	15.11	18.96	18.91
Pittsburgh	.15	8.33	9.60	10.60	8.48	8.71	8.79	8.75	10.95*	15.80	14.80	19.35	18.60
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	10.10[5]	11.10[6]	9.857	11.34*	18.50	16.10	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.00	10.00	9.70	9.80	10.80	14.05	16.55	16.35	20.65	20.15
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20	.....	17.35	21.55	21.05
St. Louis	.15	8.69	9.94	10.61	8.74	9.08	9.25	9.12	9.56	15.66	15.16	19.01	18.96
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81	.....	15.26	.....	19.06

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] ⅛" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective April 7, 1958)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R5*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	66.50	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	74.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct excep t low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pc t manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	40.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50 S2.75	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2,* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9,* McKeesport, Pa., *F1;* Reading, Pa., *C2,* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *J3;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (.25¢ pe. lb higher); New Bedford, Mass. (.25¢ per lb higher), *R6;* Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1,* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1.* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5,* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owenboro, Ky., *G5;* Bridgeport, Conn., *N8.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7,* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*
Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R5;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R5;* Watervliet, *A3;* Pittsburgh, Chicago, *U1* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

(Effective April 7, 1958)

CF&I INDUSTRIAL WIRE CLOTH

CF&I Industrial Wire Cloth is available in a wide range of metals, meshes and weaves for every type of job—screening, filtering, fabricating, grading, cleaning and processing. CF&I manufactures wire cloth to your specifications or ships from a large stock of standard items.

For full details contact our nearest sales office.

5402 A

CF&I INDUSTRIAL WIRE CLOTH
THE COLORADO FUEL AND IRON CORPORATION

In the East: WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Fresno • Grand Junction • Houston • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Sacramento • Salt Lake City • San Antonio • San Francisco • San Leandro • Seattle • Spokane • Wichita

CF&I OFFICES IN CANADA: Montreal • Toronto
CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

We cast *all* of these alloys . . . it will *pay you* to consult us

Aluminum Bronze *(all grades)*—Aluminum Manganese Bronze (HY-TEN-SL), 90,000 tensile to 120,000 tensile — Manganese Bronze — Nickel Manganese Bronze — Gun Metal — Phosphor Bronze—Valve Bronze—Nickel Bronze—Cupro Nickel — Silicon Bronze — Hydraulic Bronze — Bearing Bronzes — Red Brass, etc.

Note: Our new, flat opening, flexible-bound "Reference Book on Bronze Casting Alloys" has just come off the press — copy will be sent upon request on your Business Letterhead.

AMERICAN MANGANESE BRONZE COMPANY

4701 RHAWN ST., HOLMESBURG, PHILADELPHIA 36, PA.

Established 1909

(Ferroalloy prices will next appear in the April 17 issue)

To identify producers, see Key on preceding page

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.795	T-1
18	4	1	—	5	2.50	T-4
18	4	2	—	—	1.96	T-2
1.5	4	1.5	8	—	1.155	M-1
6	4	3	6	—	1.545	M-3
6	4	2	5	—	1.30	M-2
High-carbon chromium					.925	D-3, D-5
Oil hardened manganese					.475	O-2
Special carbon					.36	W-1
Extra carbon					.36	W-1
Regular carbon					.305	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*A3, J2, L4, C4*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302				37.50
	304	37.95	42.25	46.70	40.00
	316	44.40	49.50	54.50	58.75
	321	40.05	44.60	49.30	47.25
	347	42.40	47.55	52.80	57.00
	405	29.85	33.35	36.85	.....
	410	29.55	33.10	36.70	.....
	430	29.80	33.55	37.25	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.525	6.50	6.975				
Cleveland *R3*							14.75
So. Chicago *R3*				9.75			
Ensley *T2*	5.525	6.50					
Fairfield *T2*		6.50		9.75		6.60	
Gary *U1*	5.525					6.60	
Huntington *C16*		6.50					
Ind. Harbor *I1*	5.525		6.975	9.75		6.60	
Ind. Harbor *Y1*				9.75			
Johnstown *B3*		6.50					
Joliet *U1*			6.975				
Kansas City *S2*				9.75			14.75
Lackawanna *B3*	5.525	6.50	6.975			6.60	
Lebanon *B3*			6.975		14.50		14.75
Minnequa *C6*	5.525	7.00	6.975	9.75		6.60	14.75
Pittsburgh *P5*							14.75
Pittsburgh *J3*				9.75			
Seattle *B2*				10.25		6.75	15.75
Steelton *B3*	5.525		6.975			6.60	
Struthers *Y1*				9.75			
Torrance *C7*						6.75	
Williamsport *S5*		6.50					
Youngstown *R3*				9.75			

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$15.00 to $15.75
Foundry, beehive (f.o.b.)	$17.50 to $19.00
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field		9.625	
Armature	11.10	10.65	11.35
Elect.	11.80	11.55	12.05
Special Motor		12.10	
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00	14.75	15.25
Trans. 65	15.55		
		Grain Oriented	
Trans. 58	16.05	Trans. 66	20 20
Trans. 52	17.10	Trans. 80	19.20
		Trans. 73	19.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100,110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick *Per net ton*

Standard chemically bonded, Balt.	$105.00
Standard chemically bonded, Curtiner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite *Per net ton*

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Midwest	17.00
Missouri Valley	15.00

(Effective April 7, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187		212	193	8.65	9.20
Aliquippa *J3***	173	190			190	8.65	9.325
Atlanta *A8***	175	192		214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	8.75	9.425**
Buffalo *W6*						8.65	8.95*
Chicago *N4*****	173	190	172	212	196	8.65	9.325
Cleveland *A6*							
Cleveland *A5*						8.65	
Crawf'dsv. *M4***	175	192		214	198	8.75	9.425
Donora, Pa. *A5*	173	187		212	193	8.65	9.20
Duluth *A5*	173	187		212	193	8.65	9.20
Fairfield, Ala. *T2*	173	187		212	193	8.65	9.20
Galveston *D4*	9.10‡						
Houston *S2*	178	192		217	198	8.90	9.45
Jacksonville *M4*	184-1	197		219	203	9.00	9.675
Johnstown *B3***.	173	190	172		196**	8.65	9.325**
Joliet, Ill. *A5*	173	187		212	193	8.65	9.20
Kokomo *C9**	175	189		214	195*	8.75	9.30*
L. Angeles *B2*****						9.60	10.275
Kansas City *S2**	178	192		217	198*	8.90	9.45*
Minnequa *C6*†	178	192	177	217	198†	8.90	9.45†
Monessen *P6*					193	8.65	9.20
Palmer, Mass. *W6*						8.95	9.50*
Pittsburg, Cal. *C7*	192	210			213	9.60	10.15
Rankin, Pa. *A5*	173	187			193	8.65	9.20
So. Chicago *R3*	173	187			193	8.65	9.20
S. San Fran. *C6*‡				236		9.60	10.15†
Sparrows Pt. *B3***	175			214	198	8.75	9.425
Sterling, Ill. *N4*****	175	192	172	214	198	8.75	9.425
Struthers, O. *Y1**						8.65	9.30
Worcester *A5**	179					8.95	9.50
Williamsport *S5*.							

* Zinc less than .10¢.
** 11-12¢ zinc.
*** .10¢ zinc.
† Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.40	12.60	15.60	18.55
Bristol, Conn. *W12*		10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R2*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70		
Detroit *D1*	9.05	10.50	12.70	15.70	
Detroit *D2*	9.05	10.50	12.70		
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60		
Franklin Park, Ill. *T8*	9.05	10.25	12.45	15.45	18.40
Harrison, N. J. *C11*			12.90	16.10	19.30
Indianapolis *J3*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Pittsburgh *S7*	8.95	10.40	12.60	15.60	18.55
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*		10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *J3*	8.95	10.40	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
National Tube	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
Pittsburgh Steel	2	13	36.34	42.56	
	2½	12	48.94	57.31	
	3	12	56.51	66.18	
	3½	11	65.97	77.25	
	4	10	87.61	102.59	

Tubexperience in action

Superior weighs a wall to "zero in" on your tubing tolerance

Weight control gives precise check of tubing dimensions to help your product performance

*These delicately balanced scales weigh a length of tubing accurately to within 1/1000 lb. The relationship of weight to length and to OD tells us how closely the tubing wall or ID conforms to specifications. This fast, precise method of checking average wall or ID enables us to provide you with a tubing order whose overall uniformity is unusually high. In certain applications, tubing produced by this weight control method can materially improve performance for you. It results in minimizing variations in your product caused by tubing whose average wall or ID varies too widely from the required design mean.

This is but one of many modern tools and techniques that help improve the already high quality of Superior small tubing.

Our premium quality small tubing is offered in a range of analyses (over 120) unsurpassed in the industry. Included are stainless, carbon and alloy steels, nickel and nickel alloys, beryllium-copper, titanium and zirconium—and 16 different Super Alloys. Our range of sizes and shapes is equally extensive.

Special services include statistical quality control, pilot and test lot sampling and melting, dye penetrant inspection, ultrasonic and hot tensile testing, eddy current and X-ray inspection, specification services—and field specialists who will call on you at your request.

For handy reference in your files, get a copy of Bulletin 40, "Selection and Application Guide for Superior Tubing." Write Superior Tube Company, 2004 Germantown Ave., Norristown, Pa.

Superior Tube

The big name in small tubing

NORRISTOWN, PA.

All analyses .010 in. to ⅜ in. OD—certain analyses in light walls up to 2½ in. OD

West Coast: Pacific Tube Company • 5710 Smithway St., Los Angeles 22, Calif. • RAymond 3-1331

ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3000	New Elliott	Enc. F.V. d. arm.	475	320
2	3000	New Whse.	Enc. F.V. d. arm.	525	600
1	2250	New Elliott	Enc. F.V. d. arm.	600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V. d. arm.	250	175/350
1	1500	Whse.	Enc. F.V. B.B.	525	600
4	1500	Whse.	Enc. F.V.	525	600
1	1375	G.E.	MCF	415	1300
1	1300	G.E.	MCF-12	300	200/400
1	1200	G.E.	MCF	600	450/900
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	800	G.E.	MCF	550	400/750
2	750	G.E.	MCF	600	450/900
1	750	G.E.	MCF	600	300/720
1	750	G.E.	MCF	600	120/360
4	600	Whse.		250	275/550
1	500	G.E.	TLF-2654H B.B.	250	2000/3600
1	500	G.E.	MPC-10	250	188/490
3	450	Whse.		550	415
2	400	G.E.	CY-275	300	1000/1500
1	300	Cr.Wh.	H-143 B.B.	230	1200
2	300	G.E.	MCF-6	250	190/380
2	300	G.E.	MFC	230	400
2	275	G.E.	TLC-106 B.B.	250	2000/4000
1	250	G.E.	MDF-614AE	425	950
1	225	G.E.	TLC-110 B.B.	250	1150/3600
1	200	Whse.	CB207.4	250	850/1200
1	150	Cr.Wh.	CMC-45H	230	1150
1	150	G.E.	CD. B.B.	600	250/750
1	150	G.E.	TLC-74 B.B.	250	1150/3500
1	120	G.E.	TLC-50 B.B.	250	1950/5000
1	125/150	Whse. New	CB-210.3	230	300/1500
1	120	Rel.	1050T B.B.	230	575/900
2	125	Whse.	SK-190	230	450/1200
1	125	Whse.	SK-185	230	350/1050
1	100	G.E.	CDP-115	230	1750
2	100	Whse.	SK-181	230	450/1800
1	75	G.E., B.B.	CD-1235 D.P.	600	850
6	40	Rel., B.B.	385F, TEFC	230	500/1500

MERCURY ARC RECTIFIERS

3—150 KW, G.E., Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
2—150 KW, G.E., Ignitron, 245 V. D.C.—220 V. A.C., air cooled transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	600	600	2300/4150
2	1000	G.E.	720	550	6600/13200
2	750	G.E.	720	250/300	6600/13200
1	500	Whse.	900	125/250	440
1	500	G.E.	900	125/250	440
1	350	G.E.	900	125	440/2300/4160
1	300	G.E.	1200	250	2300/4000
1	300	G.E.	1200	250	440/2300
1	250	Whse.	1200	250/275	2300
1	200	G.E.	1200	250	440/550
1	200	Whse.	1200	550	2300
1	200	El. Mfr.	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	125	440
1	110	Cr.Wh.	600	125/250	2300
1	100	G.E.	1170	250	220/440
1	100	Cr.Wh.	1800	240	440
2	100	Cr.Wh.	1160	525	220/550
1	100	G.E.	1200	250	2400/4000
2	75	(unused) Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltage
3	3333	Whse.	OISC	1	13800 x 2300
1	1500	G.E. auto	HT	3	4000/4200/4400
3	1000	G.E.	HVDDJ	1	2400 x 480
3	1000	G.E.	OA/FA	1	13800 x 230/460
2	750	G.E.	Pyranol	1	4800x85/55-255/165
1	500	Kuhl	OISC	1	13200 x 6600
3	333	G.E.	OISC	1	13200 x 2530/4380Y
3	150	G.E.	OISC	1	33000x2300/4000Y
3	100	Whse.	SK	1	4600x460/230/115

CRANE & MILL MOTORS

230 V., D.C.

Qu.	H.P.	Make	RPM	Type
14	12/15	Whse.	700/680	MCA-30, Series
1	20	Whse.	975	K-5, Series
2	23	G.E.	850	MDS-408-AE-2 sh.
2	25	G.E.	725	CO-1808, Series
1	35	Whse.	490	CK-9 Comp. S.B.
1	35	Whse.	430	CK-9 Sh. R.B.
1	45	Whse.	600	CK-9 Comp. S.B.
3	50	G.E.	650	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whse.	500	CK-9 Comp. R.B.
1	50	G.E.	550	MD-412AF, 2 Comp. R.B.
1	50	Cr.Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832 Series S.B.
6	100/140	Whse.	500/415	MC-90 Series R.B.
9	125	G.E.	625	CO-1832 Series S.B.

RE-NU-BILT by

BELYEA COMPANY, Inc.

47 Howell St. Jersey City 6, N. J.

Tel. OLdfield 3-3334

THE CLEARING HOUSE

Detroit Purchasers Up-Dating Machines

Used machinery sales there are made to buyers modernizing or improving equipment for lower operating costs.

Both shops allied with auto industry and those not are active in the market.

■ There are still buyers for good, late model machinery. And there are dealers who are just as anxious to get it for them. However, there has been a change in buyer motivation.

Detroit area dealers say they are selling to shops allied with the automotive industry, as well as non-automotive trade, despite sharp cutbacks in automobile production.

Urge To Compete — According to Dave Demarest, outgoing president of the Detroit chapter of the Machinery Dealers National Association, competition is the spur to customers. "It's a question of the purchaser being competitive in his field today," he said. "Shops are buying to round out equipment in their plants, to replace older, obsolete equipment, or to do jobs formerly done outside."

He explained many plants see the need for low-cost modernization of their operations in order to hold jobs they already have. Others see the need to cut costs to make a profit. This is particularly true in production shops.

"Detroit," he points out, "has the greatest supply of production machinery of any part of the country. Naturally, then, we are able to get good equipment for our customers."

Pipelines to Elsewhere—He believes some of the best buys of used machinery are available in the area, particularly on good, late model production machinery in all categories. In addition, most dealers keep a continuous flow of inquiries going to dealers in other parts of the country looking for specific equipment or constantly reviewing lists of equipment available there.

Window Shopping Encouraged —Owners of smaller plants like to window shop when their business is slow. They get a lot of encouragement and attention in this from the used machinery dealers. Dealers know many plant owners don't have time to look around when their shops are going at capacity. However, they also know that by looking around during slack periods, customers see what is available and are more apt to buy when their particular business picks up.

Dealers say they would like to encourage more of this type traffic in their showrooms. Partially, of course, they have an eye on future sales. But, probably even more important, the shopper may find a machine he won't want to pass up.

February Sales Gain

Dollar sales volume of used machinery in February showed an increase of 0.7 pct over January levels, according to the Machinery Dealers National Assn.

The January sales index, taking 1947-1949 sales as a base of 100, was 121.1, the highest rating since July, 1957. Dealer inventories rose in February by 23.6 pct over January, the MDNA indicates. And their dollar value climbed by 24.5 pct over the initial month of '58.

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3 x 3 x ⅜" Buffalo No. 1 Angle Bending Roll
BALER
Model #122-PX-60 Logemann, Baling Chamber 60 x 14 x 18"
BENDER & STRAIGHTENER
Pels Type JH All Steel Bender & Straightener for Beams, Channels, Angles Tees—Angles Equal & Tees 8 x 8 x 1⅛"
BENDING ROLLS
8' x ¼" Bertsch Initial Type
10' x ¼" King Pyramid Type
12' x 5/16" Bertsch Initial Type
18' x 1" Niles Pyramid Type
BRAKE—PRESS TYPE
10' x ⅜" & 12' x ¼" Hydraulic—NEW
CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	50' Span	220/3/60
5 ton Shepard Niles	70' Span	230 Volt D.C.
8 ton P&H	55' Span	220/3/60
10 ton Shaw	48' Span	230 Volt D.C.
10 ton P&H	52' Span	250 Volt D.C.
10 ton Shaw	120' Span	230 Volt D.C.
15 ton Shepard Niles	36' Span	230 Volt D.C.
20 ton Shepard Niles	98' Span	250 Volt D.C.
20 ton P&H	100' Span	250 Volt D.C.
120 ton Shepard Niles	77' Span	220/3/60

DRAW BENCHES
8,000# Waterbury Farrel Single Draw 20 Ft. Length of Draw
10,000# Aetna Standard Single Draw 44 Ft. Length of Draw
FLANGING MACHINE
¾" McCabe Pneumatic Flanging Machine
FORGING MACHINES
1" to 5" Acme, Ajax, National
FURNACE—MELTING
15 ton Heroult Top Charge, 12' Shell
HAMMERS—BROAD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.
LEVELERS—ROLLER
37" Torrington, 19 Rolls 1 31/32", dia.
44" Newbold, 9 Rolls 4" dia.
60" Aetna Standard, 17 Rolls 4⅝" dia.
PLATE DUPLICATOR
No. 12 Thomas Single End, Punch Capacity 150 tons Table Area for handling 5' x 10' Plates
PRESSES—HYDRAULIC
500 ton Watson Stillman 4 Col. Piercing Press
600 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes, 36" Stroke, 48 x 45" Bet. Cols.
1500 ton Bliss 15" Stroke, Bed 49" x 48"
1500 ton Mesta Steam Hydr. Forging Press
4500 Baldwin-Lima-Hamilton Hydr. Forging Press
PRESSES—STRAIGHT SIDE
180 ton Hamilton #847, 12" Str. 35½" Bet. Ups.
200 ton Clearing F1200-42, Stroke 30", Bed 44"x38"
250 ton Bliss SI 7⅛ Str. Blstr. 33"x39"
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Cleveland Style C, Arch Jaw, Capy. ¾" x ¾"
Cleveland Style EF, Arch Jaw, Capy. 1¼" x 1"
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Two Stand Two High 6" x 5", Comp. with Acc.
ROLLING MILLS
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10" x 16" Single Stand Two High
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42" Bliss Up-Cut Shear, Capacity .125" Max. With Hump & Run-out Tables
SHEARS—SQUARING
10' x ½" Bertsch
14 x 3/16" Cincinnati #1814
SHEAR—ANGLE
6 x 6 x ⅜" Hilles & Jones
SLITTER
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36" Wean Slitting Line
48" Wean Slitting Line
STRAIGHTENERS
24" Hallden Straightening & Cutting Machine
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Torrington 12-Roll Capy. 1¾" Sq. Etc.
No. 3 Medart 3 Roll, Capacity to 4⅛" Tubing
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600	*G.E.	K-63455	1200
500	*G.E.	K-63455	1200
500	*G.E.	I-13-E	900
350	*G.E.	KT-559-A	1800
300	*G.E.	K-6344	1200
250	*West (TE)	CS-81205	1800
250	*G.E.	KT-509-S	1800
250	*West	CS-875-S	1800
250	Brook	RS-28	1200
200	*G.E.	FT-549	3600
200	*G.E.	I-K-13B	1800
200	West	CSP-381-S	1800
200	Brook	RS-27	1200
200	*West	CS-930-A	900
200	G.E.	KT-564-S	720
200	*Al.Ch	AN-37-G	720
200	*West	CS-1010	600
200	Al-Ch	ARW-631	600
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150	West	CSP-5815	1200
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150	*West	CS	600

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790 CFM	100 psi	15½-9½x10 Ing. XRE 3-60-4000.	
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870 CFM	125 psi	17-10½x12 Ing. XRE 3-60-220.	
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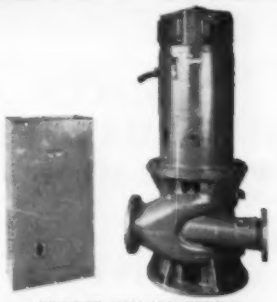

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1—Silver 12" drill, belt driven
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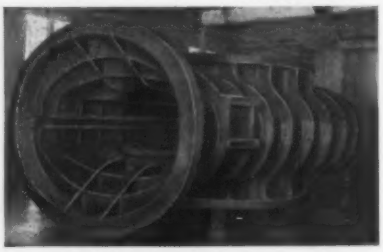

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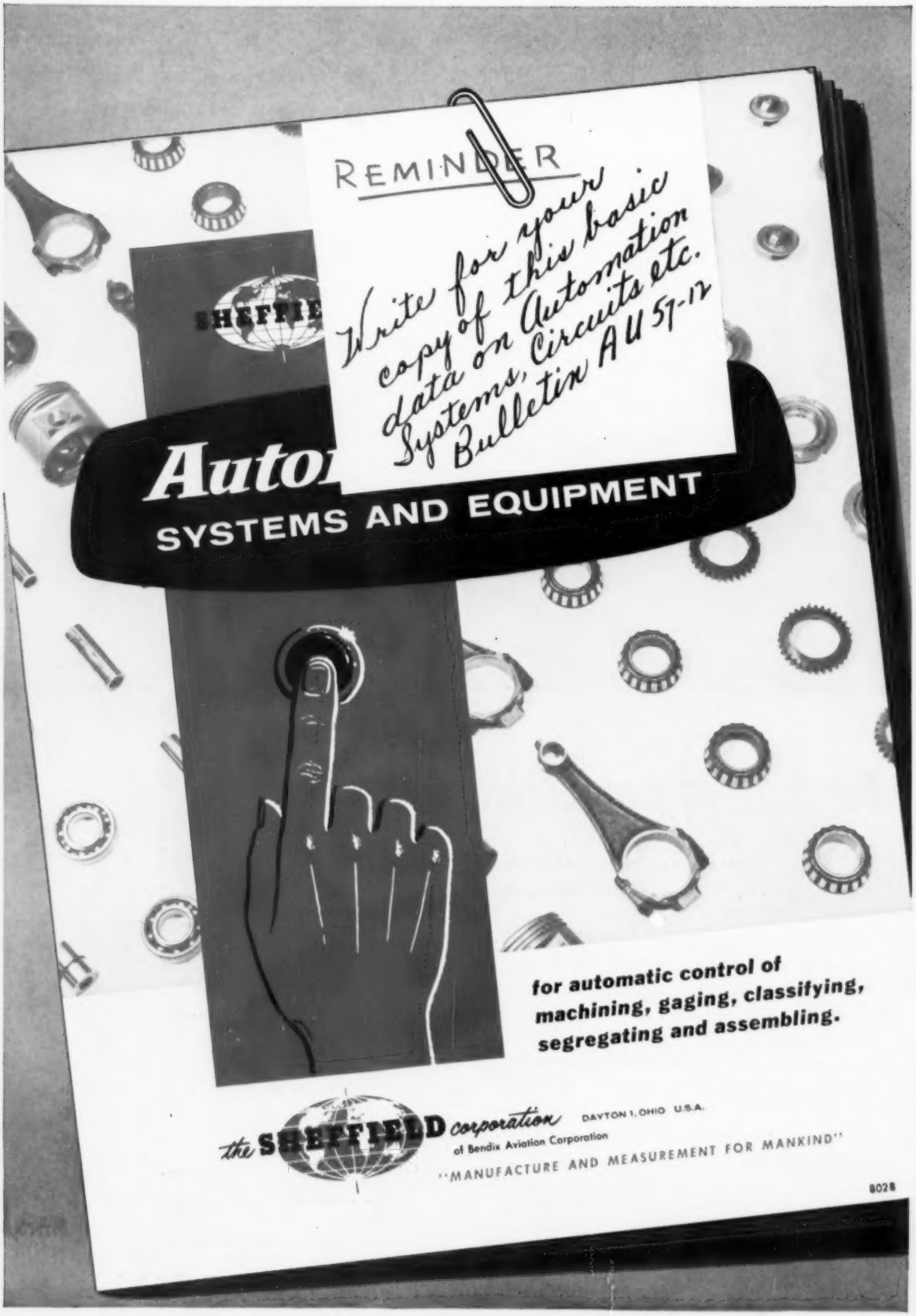
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